THE MYSTIC MID-REGION

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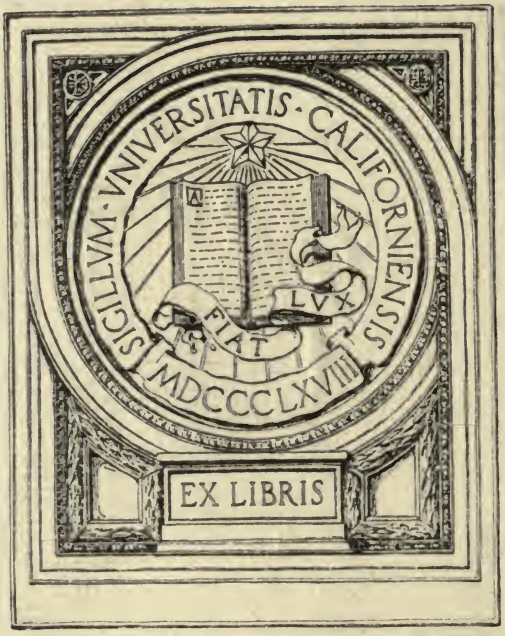

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TEAMING IN DEATH VALLEY

The Mystic Mid-Region

The Deserts of the Southwest

By

Arthur J. Burdick

With 54 Illustrations

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Kingdom of solitude, thou desert vast,
The keeper thou of secrets of the past,
For what, O Desert, was thy land accurs'd?
Thy rivers dried, thy fields consumed by thirst?
Thy plains in mute appeal unfruitful lie
Beneath a burning, stern, relentless sky
That brings its showers of life-renewing rain
Unto the mount, but ne'er unto the plain.

What secret guardest thou, O Desert dread?
What mystery hidest of the ages dead?
Doth some strange treasure lie within thy breast
That thou wouldst guard from man's most eager quest?
Or doth there in thy solitude abide
Some mystery that Nature fain would hide?
Some secret of the great creative plan
Too deep, too awful for the mind of man?

O Desert, with thy hot, consuming breath,
Whose glance is torture and whose smile is death,
Realm of the dewless night and cloudless sun,
Burn on until thine awful watch be done.
Then may the shifting winds their off'rings bring—
The yielding clouds their life-fraught dews to fling
Upon thy yearning, panting, scorching breast,
That with abundance thou at last be bless'd.

So, where thy wasted sands now barren lie,
Green fields may some day meet a smiling sky.
Where now but lurks grim, ghastly, burning death,
The violet may shed its fragrant breath.
It hath been said—a sure, divine decree—
That in the solitude shall gladness be;
And, by that One from whom all goodness flows,
That thou shalt bloom, O Desert, as the rose.

A. J. B.

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THE MYSTIC MID-REGION

CHAPTER I

THE DESERT

BETWEEN the lofty ranges of mountains which mark the western boundary of the great Mississippi Valley and the chain of peaks known as the Coast Range, whose western sunny slopes look out over the waters of the placid Pacific, lies a vast stretch of country once known as the "Great American Desert."

A few years ago, before the railroad had pierced the fastness of the great West, explorers told of a vast waste of country devoid of water and useful vegetation, the depository of fields of alkali, beds of niter, mountains of borax, and plains of poison-impregnated sands. The bitter sage, the thorny cacti, and the gnarled mesquite were the tantalizing species of herbs said to abound in the region, and the centipede, the rattlesnake, tarantula, and Gila

monster represented the life of this desolate territory.

More recently, as the railroads have spanned the continent at different points, we have knowledge of several deserts. There are the "Nevada Desert," the "Black Rock Desert," the "Smoke Creek Desert," the "Painted Desert," the "Mojave Desert," the "Colorado Desert," etc.; the "Great American Desert" being the name now applied to that alkali waste west of Salt Lake in Utah. As a matter of fact, however, these are but local names for a great section of arid country in the United States from two hundred to five hundred miles wide, and seven hundred to eight hundred miles long, and extending far down into Mexico, unbroken save for an occasional oasis furnished by nature, or small areas made habitable by irrigation.

Where the old Union Pacific drew its sinuous line across the northern section of the desert, a trail of green spots was left to mark the various watering-stations for the engines. The Southern Pacific railroad left a similar line of oases down through the Colorado Desert, and the Santa Fe, in like manner, dotted with green spots the Great Mojave Desert. The water at these stations is obtained in some

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instances by drilling wells, and where it can not be obtained in this manner it is hauled in tank cars from other points.

A portion of the desert lies below the level of the sea. Death Valley, in the Great Mojave Desert, has a depression of one hundred and ten feet below sea-level, while portions of the Colorado Desert lie from a few feet to four hundred feet below ocean-level. In the latter desert there are 3900 square miles below sea-level, and there are several villages in this desert which would be many feet submerged were the mountain wall between sea and desert rent asunder.

There is a mystery about the desert which is both fascinating and repellent. Its heat, its dearth of water and lack of vegetation, its seemingly endless waste of shifting sands, the air of desolation and death which hovers over it, — all these tend to warn one away, while the very mystery of the region, the uncertainty of what lies beyond the border of fertility, tempts one to risk its terrors for the sake of exploring its weird mysteries.

Strange tales come out of the desert. Every one who has ventured into its vastness, and who has lived to return, has brought reports of experiences and observations fraught with

the deepest interest, which tend to awaken the spirit of adventure in the listener. The most famous of the American deserts are the Great Mojave and the Colorado, the latter lying partly in the United States and partly in Mexico. As trackless as the Sahara, as hot and sandy as the Great Arabian, they contain mysteries which those deserts cannot boast. Within their borders are the great salt fields of Salton and of Death Valley, which have no counterpart in the world; the "Volcanoes," a region abounding in cone-shaped mounds which vomit forth poisonous gases, hot mud, and volcanic matter, and over which region ever hang dense clouds of steam; the great niter fields and borax plains of the Mojave, and other equally strange exhibitions of nature.

There are other mysteries in the desert. Amid its sands are gold and gems for the fortunate finder, and many are they who have lost their lives in search of these treasures. Hovering over the desert, too, is that phantom, that desert apparition, the mirage, a never-ceasing wonder to the fortunate traveler who wants not for water and who is in no doubt as to his way across the dreary waste, and a never-ceasing torment and menace to the thirst-

From photograph by C. C. Pierce & Co

MOUNT SAN JACINTO FROM THE DESERT

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tortured wayfarer lost in the dread solitude. Imagine the mockery to the thirsty traveler of a rippling sheet of water, its blue waves rolling ever in view but receding as he advances, leaving only the burning sands to the perishing one! Is it any wonder that men go mad in the desert? And yet, locked in the breast of this waste is more fertility than is necessary to supply the continent with sustenance.

The Colorado Desert is thus called because the great river of that name carved it out of the sea. It is also destined to lose the name of desert because of that same river.

At one time the Gulf of California extended nearly up to Banning, where rise those two sentinels of the plain, Mt. San Jacinto and Mt. Grayback, each towering nearly two miles above the surrounding country. This was before the Colorado River had cut its way through the mountains to the sea, forming that magnificent chasm known as the Grand Cañon. For endless centuries the great river has been eating out the heart of the continent, pulverizing the rock and earth, and bearing it in its turbid tide down from the mountains and tablelands to the lower plains and to the sea.

A part of its burden of silt was laid down over the northern portion of the gulf, and a part of it was carried by the force of the current far down into the great body of water and was piled up ninety miles below the present boundary line between Mexico and the United States. This bank was about sixty miles long, extending in an easterly and westerly direction. Along the right side of the current was formed a lateral embankment, which eventually shut off the river from its former inlet into the gulf and directed it to its present mouth, some two hundred miles lower. This, joining with the sixty-mile embankment, severed one portion of the gulf from the main body and left an inland sea where now is the desert. Then the thirsty sun drank up the waters of this sea and left the land of desolation. How long ago all this happened is a matter of conjecture.

There are many places on the boundaries of the desert where the ancient beach-line may be traced long distances. Here are found numerous shells and corals. Many of the shells are unbroken, and one might almost believe, to look upon them, that they were tossed there by the restless waves no longer ago than yesterday. The varieties of shells

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ANCIENT SEA BEACH, COLORADO DESERT, NEAR COACHELLA

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and of sea relics correspond very closely with those now abounding in the sea.

There are evidences that the desert has been dry land many centuries. Upon its breast are found Indian pottery and implements of a style and pattern antedating those in use at the time the white man reached this country. Then, too, as far back as the sixteenth century, when the earliest exploration of that region was made, the desert-dwelling tribes seem to have been thoroughly established in the territory once occupied by the gulf. It doubtless required centuries, after the waters were cut off from the region, to dry up the inland sea and make it possible for man to enter in and occupy the territory.

It is the belief of some scholars that the land was submerged when the first Spanish explorers reached the coast. In support of this theory they point to certain maps which show the gulf as covering that region.

A map of the early navigators recently in the possession of General Stoneman of the United States Army, which was obtained by him in the City of Mexico, shows the Gila River as entering the gulf, whereas the Gila River now enters the Colorado River ninety miles north of the present mouth of the Colorado.

A map of California, published in 1626 by N. Sanson d' Abbeville, geographer to the King of France, pictures the Gulf of California as extending along the entire eastern boundary of the State, and connecting with the Pacific Ocean on the north. This map was made from sundry drawings and accounts furnished by the early navigators, and is glaringly incorrect. It is certain that the gulf did not then, or at any time, extend to the Pacific. The early explorers and map-makers conveniently guessed at matters upon which they could get no information.

From photograph by C. C. Pierce & Co. From an old Spanish map.

WHEN CALIFORNIA WAS AN ISLAND

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CHAPTER II

THE LAND OF THIRST

WHEN the "tenderfoot" first strikes the desert country he is surprised to learn that he is expected to pay for the water he uses for himself and for his beast. A little later he becomes indignant upon finding himself unable to purchase even a small quantity of the necessary fluid because of the extreme caution of the proprietor of some desert well where he has expected to replenish his stock of water.

It is not an unusual happening for the desert traveler, who has toiled hours over the burning sands after his supply of water has been used up, to find the desert-dweller unwilling to spare a drop of his scanty supply. Not all desert wells are dependable, and sometimes the solitary dweller of the oasis finds his supply exhausted; he then has to haul all the water he uses forty or fifty miles until such time as the winter rains come to replenish the vein which feeds his well.

One who has never experienced it can gain no idea of the torture of thirst upon the desert. The scorching sun from a cloudless sky, with never so much as a hint of haze to temper its rays, seems fairly to drink the blood of the traveler exposed to its fierceness. From the sands rises a cloud of fine alkali dust which penetrates the nostrils and enters the mouth, stinging and inflaming the glands, and adding to the torture of thirst. A few hours of this suffering without water to alleviate the pain is sufficient to drive most men mad.

It is this desert madness which travelers most fear. If one can keep a clear head he may possibly live and suffer and toil on to a place of safety, even though bereft of water many hours, but once the desert madness seizes him all hope is lost, for he no longer pursues his way methodically, but rushes off in pursuit of the alluring mirages, or chases some dream of his disordered brain which pictures to him green fields and running brooks, ever just at hand.

Men tortured by thirst become desperate. A thirsty man knows no law save that of might. Men who would, under ordinary circumstances, scorn to do even a questionable act, will, when under the pressure of extreme

From photograph by C C. Pierce & Co.

AN INDIAN WELL IN THE DESERT

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thirst, fight to the death for a few drops of water.

Not long ago a respectable citizen of a little California town had occasion to cross the desert at a point where water-holes were few and far apart. He depended upon obtaining water at a certain ranch, established at one of the oases on his route, and when he arrived there he and his guide and burros were in sad condition, having been several hours without water. He gave his guide a five-dollar gold-piece and told him to see the rancher and purchase the water necessary to carry them to the next watering-place. It happened that the rancher's well was in danger of going dry, and he declined the money, refusing to part with any water. Pleadings were unavailing, and the guide returned to his employer and reported his inability to make a deal. Then the staid citizen arose in his wrath and, with a ten-dollar gold-piece in one hand and a revolver in the other, he sought the rancher.

"There is ten dollars for the water, if you will sell it," he said; "and if not, I will send you to Hades and take it, anyway! Now which will it be?"

There was but one reply to an argument of that kind; the rancher sulkily accepted the

money, the brackish water was drawn from the well, and the journey was soon resumed. As a result of this transaction, however, the rancher was obliged to take a forty-mile journey over the desert and back, to replenish his water-supply from another well.

John F. McPherson, of Los Angeles, manager of the Nevada Land Office, left Los Angeles, in August, 1900, to traverse the Great Mojave Desert, on his way to look over the lands in the Parumph Valley, in Nevada. His experience, which was by no means uncommon, is best related by himself.

"I left Los Angeles by team," he says, "for the purpose of retracing the Government surveys and making field notes. I had with me two companions, one Samuel Baker and a young man from the East. We proceeded over the foothills to Cajon Pass, thence to Victor, out on the desert. It was in the burning days of a fierce, dry summer. The earth was fervid and the air quivered with the intense heat of the sun which poured its burning rays from a cloudless sky. Bad luck accompanied us from the very start. At Pomona, thirty miles from Los Angeles, we lost a horse and had to purchase another. At Daggett, out in the desert, which place we reached the second day of our desert travel, we found the thermometer registering 128 degrees in the shade. We passed through Daggett and made camp, ten miles farther on, at dark.

"Eighteen miles beyond Daggett is Coyote Holes, where we expected to find water to replenish the supply

From photograph by C. C. Pierce & Co.

AN OASIS IN THE COLORADO DESERT

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with which we left Daggett at seven o'clock in the morning. We found the well dry when we reached there, and the place red with alkali. Near the well, two pieces of two by four scantling marked the grave of some traveler who had preceded us and who had run short of water before reaching the Holes. He had arrived too far gone to go farther, and his companions had remained with him till the end and had given him a burial in the sand and set the scantlings to mark the spot. Those scantlings proved our salvation a little later.

"By noon we had consumed all but about three gallons of our water and we determined to save this till the last extremity, for we had yet eighteen miles to go to the next watering-place, Garlic Springs. Our horses were already in bad shape and nearly crazed for want of water. In their eagerness to reach it they plunged forward at a pace that threatened soon to exhaust them. Our efforts to restrain them by means of the reins were unavailing, and we were obliged to take off our coats and throw them over the heads of the animals and then lead them by the bits in this blinded condition.

"Just beyond Coyote Holes, on the road to Garlic Springs, is a fearful sink known as Dry Lake. Here the ground is shifty and treacherous and the wheels of the wagon sank deep into the sand. Just as we had reached the farther side of the lake the forward axle of the wagon broke, letting the front part of the wagon fall to the ground. This frightened the horses so that they became almost unmanageable. They seemed to realize that this delay meant possible death, and their cries were almost human-like and were indeed pitiable to hear.

"By this time the condition of my companions and myself was dire, and we realized that time was of the greatest importance. The thermometer registered 130

in the shade—and no available shade. To add to our misery and increase our danger a terrible sand storm arose, blinding, stinging, and almost smothering us.

"It was like standing in front of a blast furnace, opening the door, and catching at the blast. There were 1600 pounds of provisions in the wagon at the time, and if we abandoned that we were sure to perish of starvation. It could not be thought of.

"We unhitched the horses and tied them to the rear of the wagon and stretched the heavy canvas which had covered the wagon over them to protect them from the sand storm. Our salvation lay with the horses. If they became exhausted or broke loose, we knew that our bones would be left to bleach upon the desert sands as have the bones of so many desert travelers.

"The young Easterner lost his courage and cried like a baby. The three gallons of water were divided among man and beast, and then Baker started back to Coyote Holes to get the two pieces of scantling with which to mend our broken wagon. While he was gone the young Easterner and myself threw the freight from the wagon to make ready for the work of trussing up the rig when Baker returned with the scantlings.

"The storm continued to increase and it soon became as dark as midnight. When it came time for Baker's return the storm was at such a height that we feared he would have perished in it or that he had lost his way. Hour after hour passed and still he did not return, and we lost hope. At about 9 o'clock in the evening, however, he came into camp with the scantlings. His mouth was bleeding from thirst and he was nearly blinded with the sand, but he had the material with which to repair the wagon, and hope returned to all our hearts.

"With stout wires and the timbers we soon had our

From photograph by C. C. Pierce & Co.

SENTINEL PALM

A welcome sight to the desert traveler, for it marks an oasis hidden in the cañon

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wagon in shape, and the freight was speedily loaded upon it and we prepared to resume our journey. Our ill-luck, however, was not at an end, for when we attempted to attach the tongue of the wagon the king-bolt was not to be found. It was midnight when we had our wagon repaired and loaded, and it was two o'clock before we succeeded in pawing the king-bolt out of the sand where it had fallen. Then we had twelve weary miles to travel before we could reach water. We were all in a terrible state when we started, and the wagon sank so deeply in the sand that our progress was fearfully slow.

"Twenty-four hours without water in the desert is a terrible thing. Before we had covered half the distance to Garlic Springs Baker went mad. He was for abandoning the party, and that meant, to one in his condition, certain death. There was but one thing I could think of to prevent him, and that I did. I pulled my revolver and told him if he attempted to leave the party I would shoot him. He had enough sense or sanity to heed the admonition, and he stayed with us. I had to carry my revolver in my hand, however, and constantly keep an eye on him. It was ten o'clock when we reached the springs, and we were all on the verge of delirium. It was several hours before our swollen and parched throats would admit more than a very few drops of water at a time. We bathed in the water, soaked towels in it and sucked at the ends, and by degrees fought away the demon of thirst Baker spent five weeks in a hospital after reaching civilization, and we all were unfitted for hard work for a long time."

It is easy to gather tales of this sort from the towns bordering upon the deserts. There

are still more disastrous tales which remain untold because none survive to relate them. Items similar to the one herewith given are by no means rare. The subjoined one is an associated press dispatch dated Imperial, April 28, 1903. It says :

"Five human skeletons were found to-day at the east side of the Salton River, making eighteen found to date on the part of the desert being brought under irrigation. The presumption is that the persons may have perished from thirst as many have done in this region, which a few months ago was utter barrenness. Nothing has been found to give any clew to the identity of these persons whose bones may have lain on the desert for many years."

Down in the Colorado Desert is a well which is bringing its owner a fortune. Within a radius of fifty or sixty miles are a score or more of mining camps where no water is to be found. Prospectors and other travelers, also, frequently pass that way, and there is no other water for many miles about. These travelers and the residents of the mining camps are glad to pay handsomely for water from this well.

The proprietor has built tanks and loading apparatus for the convenience of his patrons, and he has established the following schedule of prices :

From photograph by C. C. Pierce & Co.

31 AN OASIS DWELLING THATCHED WITH PALM LEAVES IN COLORADO DESERT

This might pass for a cannibal's hut in the South Sea Islands

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100 gallons, or less,	25 cents per gallon.
Two-horse load,	10 cents per gallon.
Four-horse load,	8 cents per gallon.

The well is a very deep one and the water was obtained by drilling. It requires a power-pump to raise the water to the surface, and the fuel to run the boiler and engine has to be hauled many miles across the desert sands, so, after all, the rates for water are not so exorbitant as they may seem at first glance.

Every year the great deserts of the West claim scores of victims, the most of whom die of thirst. Men go out into the arid plains, are not again heard from, and their fate remains, in many cases, a mystery to the end of time. Again, beside a bleaching skeleton is found a trinket or belonging which serves to identify the remains. Sometimes the identification comes long after death, as in the case of a Los Angeles prospector who years ago left that city with a companion to cross the desert.

The two men lost their way, and the prospector, leaving his companion with the burros at the foot of an eminence, climbed to the top to take a survey of the country and try to get his bearings. After waiting an hour or more for him to return, his comrade began

searching for him, and after several hours of vain seeking he resumed the journey alone and eventually reached his destination in safety. Twenty years later some prospectors found human bones upon the desert and beside them a hunting-knife and a watch which had belonged to the long-lost prospector. He had died within two miles of good water.

Here and there in the solitudes of these great Saharas may be seen rude crosses, or stones heaped into mounds, to mark the spot where, in horrible torture, some human life went out. And, strange as it may seem, these graves are more plentiful in the vicinity of the oases than elsewhere. To drink heavily after several hours of abstinence is almost certain death. Many a poor fellow has struggled on through hours of extreme torture, buoyed up by the thoughts of the refreshing draught awaiting him, only to die in agony from drinking too deeply of the precious potion.

Sometimes death comes from a very different cause. Not long ago a veteran prospector was taking a party across the desert, and saw in the distance a green spot on the plain. They were headed for Timber Mountain, where good water is plentiful, but they had run short

From photograph by C. C. Pierce & Co.

A DESERT BEDROOM

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of water some hours before, and were nearly choked with thirst. They turned from their course to visit the green spot, believing that water would be found there. They were not mistaken, for a bubbling spring greeted their eyes, a sight more welcome than would have been a mine of gold, but about the spring were strewn a number of human skeletons, indicating that a goodly sized caravan had met death there.

They were too thirsty to pause to make inquiry as to the cause of this wholesale fatality, and hurried on to the spring to cool their parched tongues. The leader of the party, however, was suspicious and insisted that no one should take more than a few drops of the water at that time. His caution proved their salvation, for within a few minutes after drinking of the water all were taken violently ill. The spring was a natural arsenic fountain.

As soon as the party was able to travel the journey was resumed and Timber Mountain was reached in safety. The guide carried away some of the water for analysis and thus learned of the properties of the spring. Later, he returned and set up a sign to inform travelers of the dangerous character of the water.

CHAPTER III

CURIOUS PLANTS WHICH LIVE IN THE DESERT

IN the mystic mid-region grows vegetation as weird and wonderful as the region which it inhabits. The Mojave yucca (*clistoyucca arborescens*) is a strange freak of vegetation found nowhere else in the world. The palo-verde stands grim and sentinel-like, along the banks of the Colorado River which skirts the deserts, an evergreen but leafless tree with curious branches which cross and recross each other, forming a perfect network of green vegetation. Cacti in innumerable variety abound in certain portions of the deserts, from the tiny prickly balls covered with long gray hairs to the giant sahuaro which attains a height of fifty feet. In some places the deer-bush thrives: this plant is so named because of the resemblance borne by its branches to the horns of a deer. There are also sage, mesquite, chaparral, and greasewood, and numbers of other peculiar species of plants.

From photograph by C. C. Pierce & Co.

SAHUARO, OR GIANT CACTUS

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Cacti are the most numerous of the species of vegetable life. The several varieties all have their uses to those versed in the lore of the desert. In them the Indians, who make the desert their home, find food, drink, raiment, and shelter. This is particularly true of the *cereus giganteus*, which is abundant in the arid regions of Southern Arizona, New Mexico, Texas, and Mexico. This plant grows, in many cases, to a height of fifty feet. In some sections it grows so thickly that several hundred plants are found on a single acre. The plant consists of a main trunk which rises to a height of from ten to twenty feet, and then branches into two, three, or several columns, which grow upright several feet. The main trunk and branches are ribbed, and these ribs are thickly studded with clusters of heavy spines, which if lighted will burn readily, the flame running up the ribbed columns, seeking and burning all the spines thereon. This fact has given rise to the name of "Arizona candle" which is often applied to the giant cactus.

Alternating with the spiny ribs, and just beneath the epidermis, are ligneous fascicles—one for each rib—which serve as a support for the soft tissues which constitute the bulk of the plant. These fascicles are from twenty to

forty feet long, according to the height of the plant, and are from one to three inches in diameter. They constitute the framework or skeleton of the plant, and are left standing when the plant itself dies from age or other cause. This frame is of great value to the desert Indians or to desert travelers who know its properties. The fascicles make excellent firewood, and when cut into required lengths they are used as pickets with which to build corrals, and for the roofs to the adobe huts. The spines of the plant are also used by the Indians as combs. The plant lives to be more than one hundred and fifty years old, as has been determined by counting the layers of growth.

The first flowers appear when the plant has attained a height of eight or ten feet, and they come into bloom early in May and continue in blossom till near the middle of June. The blossoms are large, white, and waxy. The flowers are borne in the axils of the bunches of spines, often fifty or more blossoms in the summit of a single branch. It comes to fruit in August, and then it is that the Indians ride from plant to plant and with long poles detach the fruit, which is gathered and preserved as food or is made into an intoxicating drink of which they are very fond.

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SPANISH BAYONET

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Another plant, a species of yucca, abundant in the southern deserts, is the Spanish bayonet. These plants have a thick, palm-like stem or trunk with long, thick, spine-pointed leaves. The flowering stem shoots up many feet in height and bears myriads of white, showy, panicled flowers, lily-like in appearance. As many as six thousand blossoms have been observed upon a single plant.

An interesting peculiarity of this plant is that it cannot pollenize itself, but is obliged to depend for its perpetuity upon a little moth whose sole aim in life seems to be to perform the work of pollenizing this plant. This moth does not eat the honey or pollen of the plant, but lays her eggs upon the stigma of the flower and then gathers the pollen of the blossom and deposits it over the eggs, thus protecting the eggs and pollenizing the plant at the same time. The larvæ hatch at the time that the flower goes into seed, and the grubs feast upon the seeds, destroying a part of them, but leaving enough to keep up the supply of plants.

The Indians eat the undeveloped flower-shoots of this plant raw, the stalks are roasted over hot stones and make a very palatable dish ; the fruit, which is cylindrical and yellow,

ripening in August and September, is eaten raw, and is also dried for future use. It is pulpy, sweet, and nourishing.

The Mojave yucca is a remarkable plant, which resembles in its nature both the cactus and the palm. It is found nowhere save in the Mojave Desert. It attains a height of thirty or forty feet, and the trunk, often two or three feet in diameter, supports half a dozen irregular branches, each tipped with a cluster of spine-like leaves. The flowers, which are of a dingy white color, come out in March and last till May, giving off a disagreeable odor. The fruit, however, which is two or three inches long, is pulpy and agreeable, resembling a date in flavor.

From the base of the plant radiate countless roots. These lie near the surface and extend a long distance, absorbing such moisture as they find with avidity. One of the peculiarities of the yucca wood is its ability to store moisture. The fiber of the wood is cellular, and it is almost equal to a sponge in its capacity for storing and retaining water. Fully sixty per cent. of its weight is sap.

The trunk and branches of the tree are covered, a portion of the time, with bristling reflex leaves, which finally fall, showing that

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A DESERT CACTUS IN BLOSSOM—ONE OF MANY VARIETIES

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bark has been added to the tree. A sectional view of this bark shows concentric rings such as characterize exogenous stems. As the yucca is an endogen, this peculiarity is a remarkable one.

Like its cousin, the sahuaro, the Mojave yucca is a friend to the Indians, who eat of the fruit when fresh, and dry it to be used when it is out of season. They also utilize the flower-buds and blossoms in preparing a stew, which, if not tempting to the appetite, is at least nourishing, and with them that is the main object of food. The seeds, when dried, are ground in rude mortars and used for mush and in making a sort of bread.

In the middle and northern desert, where the cacti are not so plentiful, there grows the *Allenrolpea occidentalis*, or greasewood. This shrub grows to the height of four or five feet, and is a leafless, jointed-branched plant, which appears to be too succulent to burn unless plucked and left for days to dry. The reverse is the case, however, for, if lighted, the plant will make an excellent fire when green, but if cut for a few hours it becomes so watery that nothing can induce it to burn. Though the days on the desert are terrifically hot, the nights are apt to be chilly, and the greasewood

often proves a most welcome friend to the traveler.

Another friend to the desert wanderer is the *chlorogalum pomeridianum*, or soap plant. This grows from two to five feet high and has a bulbous root two or more inches in thickness which is an excellent substitute for soap—hence its name. The leaves are from one to two and one half feet in length, and from an inch to an inch and a half in thickness. The plant flowers in July and August, the blossoms opening in the afternoon only. The bulb of the plant lies deep in the earth and has the power of storing moisture, in time of rain, for the long, dry months which follow.

As previously stated, the numbers of the cactus family to be found in various portions of the desert are almost innumerable. In a three-days' journey through the southern desert, taken early in May, the writer noted forty-two different varieties of cacti in blossom. These ranged from the delicate bloom of tiny plants to the gorgeous blossoms of the giant species, thirty, forty, and even fifty feet in height.

It was a most memorable trip. At no other season of the year does the desert present so gay an appearance as in May and early June.

From photograph by C. C. Pierce & Co.

"THE WELL OF THE DESERT"

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Blossoms, white, pink, yellow, purple, and scarlet, are to be seen on all sides, till one loses the idea that he is in the desert and almost dreams that he is in some wonderful garden. But there are no sparkling fountains and grassy lawns to complete the illusion ; only the thorny shrubs with their vivid blossoms and the scorching sands, the dust, the thirst, and the cloudless sky above.

A very common species of cactus is the nopal or prickly-pear, the fruit of which is known as the tuna, and which is much prized both by Indians and by Mexicans.

A welcome plant to the desert traveler is the bisnaga, or "well of the desert." This is a cyclindrical-shaped green plant thickly covered with sharp spines. By cutting out the center of the plant, a bowl is formed which quickly fills with water of an excellent quality, affording a palatable drink to the thirsty traveler. Many a life has been saved by these plants, and there have been a number of instances recorded where travelers, ignorant of the properties of the plant, have died of thirst in the midst of them.

Another cactus found in the southern desert is the grape cactus, which bears in clusters fruit resembling the tuna. The fruit is green

without and purple within, is juicy, melting, and luscious.

A very common and ungainly plant is the ocotilla, growing clusters of straight poles from ten to fifteen feet in height, which are covered with spines. The poles terminate in long spikes of beautiful scarlet blossoms.

The maguey or mescal, sometimes misnamed the century plant, is common along the foothills bordering the desert. It is from this plant that the Mexicans and Indians distil the fiercely intoxicating drink known as mescal, which contains a large percentage of alcohol of a villainous quality.

From the cluster of spiked leaves, which attain a height of four or five feet, springs a pole ten to twelve feet tall, which bears large clusters of small yellow flowers filled with a sickishly sweet syrup. The maguey furnishes the native Indian with both food and clothing. From the fibers of the leaves he weaves coarse cloth, and the inner leaves, when stripped and cooked in the earth ovens by surrounding them with stones heated on coals, are considered a delicacy.

Snake-weed is the name given a low-growing plant with a pulpy leaf, because when the leaves are crushed and applied to the wound, in case

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ONE OF THE DESERT BLOOMERS

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of snake-bite, they serve as an antidote to the poison.

Pectis, or creosote bush, is another desert plant, with odor not unlike the essence of lemon. It is prized by the Indians for its medicinal properties.

There are a number of other varieties of plants—mostly of the cactus family—which contribute to the sustenance of the Indians of the desert, but it is in the fibrous tissues of the giant cactus and the yuccas that they find their material for the weaving of garments, plaiting ropes, and making baskets and other articles of use and ornament. Of late years the squaws of the several desert tribes have found the making of baskets and other trinkets for sale to curio hunters a very profitable undertaking. One squaw of the Mojave Indians received more than three thousand dollars in a single year for work of that sort.

And the desert, which flaunts the banner of death in the face of the stranger, hands out its treasures to its children, and they live and thrive and love it.

There is a little flower found growing in certain portions of California's deserts, which fulfills the poet's statement embodied in the couplet :

"Full many a flower is born to blush unseen
And waste its sweetness on the desert air."

The little yellow blossom has, so far as the writer knows, no name in the text-books on

From photograph by C. C. Pierce & Co.

A YELLOW DIAMOND-BACK RATTLER

botany. It is a tiny blossom, growing very close to the ground, and it opens only at night. Then, whoso chances to pass through a patch of these flowers is treated to incense such as never exhaled from the most redolent orange orchard.

The perfume is given off in vast quantities, and is sweet beyond the power of language to describe, yet it is not the sickening, overpowering perfume of some plants.

One does not need to lift the flower to the face to get the fragrance, — the air is fairly saturated with the sweet odor. The daylight, however, puts an end to both blossom and perfume. There is not a sign of the blossom to be found when the morning sun lights up the desert plain. It is only the night traveler who is favored with the sweet experience arising from an acquaintance with this strange plant.

CHAPTER IV

STRANGE DWELLERS OF THE DESERT

THE representatives of the animal kingdom in the desert are fully as strange and curious as are the specimens of vegetable life. It may seem strange that animal life should exist at all in this region of death and desolation, but several forms of creatures seem to find this dread region congenial.

In keeping with its surroundings is the *crotalus cerastes*, one of the most deadly of the rattlesnake family. It is known to the frequenters of the desert region as the "sidewinder," because of its alleged propensity for springing sidewise at the object of its wrath, and because it travels with a sidelong motion. The bite of this creature is considered to be certain death, and it is a saying in the West, when some unusually frightful catastrophe overtakes one: "It was a regular sidewinder."

The sidewinder is of a grayish color, mottled with dark blotches. It is found in the very

heart of the desert, miles and miles from any known supply of water, and it is believed by many to be able to exist without that fluid.

Near the borders of the desert the great yellow diamond-back rattler, *crotalus horridus*, is found, as well as a species of constrictor

DESERT LIZARD, CHUCAWALLA, CLOSELY AKIN TO THE GILA MONSTER

known as the "bull snake." The latter grows to a length of ten or twelve feet and, while formidable to look upon, is perfectly harmless.

Such innocence is not claimed for the Gila monster, *heloderina horridum*, which is found in the southern portion of the Colorado Desert. This huge lizard is like the chameleon in one respect: it changes its color to conform to its

surroundings. It is in the main of a yellow hue, with dark markings which change to a gray or to a reddish tint according to the character of the soil about its abiding-place. When it lies quietly upon the earth it is very

HORNED TOAD

difficult to detect it because of this resemblance to the soil.

The Gila monster attains a length of nearly two feet. It is covered with horny protuberances and scales similar to the horned toad, so called. When angry it makes a hissing noise not unlike that made by a serpent.

The horned toad—which is not a toad, but the lizard *phrynosoma* — is an innocent little fellow, attaining a length of six or eight inches at the most. There was a time when his

reputation for evil was second only to that of the Gila monster. Now that he is better known he has become a plaything of children and a pet in many a household.

A common creature in the portions of the desert in which cacti abound is the cactus rat, a small rodent about midway in size between the mouse and the ordinary rat. He is provided with a bushy tail which he carries over his back, squirrel fashion. He lives upon the barrel cactus, a plant so protected by spines as to seem unapproachable by man or animal. The cunning rat, however, has found a way of attacking this formidable vegetable. He burrows in the earth at the foot of the plant and comes at it from beneath. One specimen of the matured plant will keep a colony of the rats several months. They gnaw at its vitals till nothing but the empty shell remains, then they emigrate to some other plant and there set up housekeeping for another six or eight months.

Living so far from a habitable country, the rat finds few enemies to molest it. The rattler is about the only creature which preys upon it, therefore it thrives and multiplies in the midst of the fearful region it has chosen for its home.

It is astonishing to the desert traveler, after he has crossed half a hundred miles of parched and barren territory, to find about the spring of an oasis tortoises basking in the sun or swimming in the waters of the desert well.

TARANTULA

The desert tortoise differs from the ordinary tortoise in several respects. It never exceeds in length over fifteen or sixteen inches, but in form and other characteristics it more nearly resembles the sea turtle than it does the tortoise. This leads to the belief that the desert specimen is the descendant of a sea

turtle that throve in the waters of the gulf when it extended over the now desert country. Change of conditions from sea to land—and most forbidding land at that—is supposed to have dwarfed the original species till a new one is the outcome of the change.

If one familiarizes himself with the desert, he will find that the rattler and the Gila

CENTIPEDE

monster are not the only representatives of the "poison people" in that region. The scorpion, the tarantula, and the centipede make their home there and add to the dangers and terrors of desert travel. There are also animals found here and there in the desert and along its borders, which cannot be classed as typical desert animals. Bands of wild horses and wild burros are known to roam the formidable region, migrating from oasis to oasis, cropping the grasses at one

place till they are exhausted, then moving across the burning sands, guided by unerring instinct, to the next green spot in the desert, twenty, forty, or perhaps fifty miles away. The coyote, too, finds his way to nearly all portions of the desert, and even in the midst

SCORPION

of the great desolate waste his uncanny cry goes up in the night-time, making the darkness still more lonely for the chance traveler who pitches his tent in the land of terror.

Few birds are seen in the desert after one has left the border-lands behind, but there is one inhabitant of the air which is never absent. Hovering ever over the region of death is the vulture, ready to settle down to his grewsome feast the moment thirst and heat shall have

robbed his victim of life. One may scan the heavens with never a sight of one of these birds while all goes well with himself and his beast, but let one of his horses or burros fall by the way, and lo! from the heavens descend numbers of the birds, and, should a traveler pass that way a few hours later, he would find but the whitening bones of the animal and a few fragments of the hide. And were he to look aloft, he, too, would discern not a speck against the blue canopy above him.

CHAPTER V

HUMANITY IN THE DESERT

WHY human beings should have chosen such a place as the desert for their habitation is a mystery without a solution. Possibly the forefathers of the present dwellers of the region fled thither to escape the oppression of tribes more powerful and warlike than their own. Be that as it may, there dwell in the Great Mojave and in the Colorado deserts several tribes of men who, according to their traditions, have made their home there many centuries.

Up in the Death Valley region is a tribe known as the Panamint Indians. They live in rude huts built of sticks and mud, and they subsist upon the most disgusting of foods. At a certain season of the year Owen's Lake and several smaller saline lakes in that region abound with a white grub — the larva of a two-winged fly, *ephydra Californica* — called by the Indians "Koochabee." The Indians

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A CHEMEHUEVI INDIAN AND COYOTE

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visit the lakes at the season of the year when the grub is most plentiful, and from the shores of the lakes they gather them where the waves throw them up in windrows several inches deep. The grubs are dried and are then pulverized in rude stone mortars. The powder is used in making a sort of bread which is highly prized as an article of food.

Snakes and lizards are also cooked and eaten by the Panamints, and their vegetable diet consists chiefly of leaves and buds of cactus plants and other wild herbs. They are not agriculturists and are but indifferent hunters. They seem contented with their lot and evince no desire to leave the desert for a more habitable region.

The Seri Indians are found at the extreme southern portion of the desert. At one time there were considerable numbers of them in the Colorado Desert, but in 1779 the Mexican Government, then in possession of the territory, removed them to the island of Tiburon, where the greater number now live. A few families are to be found, however, in the vicinity of the "Volcanoes" in the Colorado Desert.

The Seri Indians are unreasoning, treacherous, and indolent. The women of the tribe

command great respect from the men, and the family relationship is always traced through the mother. In the language or dialect of the tribe there is no equivalent to the word "father," although there is for "mother." Little attention is paid to the death of a male member of the tribe, but when a woman dies the funeral ceremonies are elaborate.

The Cocopahs are another banished tribe, now occupying the desert region south of the boundary line between the United States and Mexico.

Not many years ago their chief village was a few miles from Yuma, which town was their trading-post. Smallpox broke out in the Indian village, but the Indians continued to visit Yuma and soon carried the disease thither. When the authorities learned the source of the infection they forbade the Indians to come to the town, and to insure obedience to the command, a mounted guard was placed about the Indian village. Two Indians one day eluded the guards and walked into Yuma. Then the edict of banishment went forth. The Indians were driven from their homes and across the border into Mexico, and the village and all effects left behind became food for the flames.

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A CHEMEHUEVI DWELLING

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The Cocopahs, as a rule, are of fine physique, hardy, and nimble, but like all desert tribes they are unprogressive.

A peculiar burial custom prevails among these Indians. As a rule they wear their hair long—a custom with all of the Western tribes —but upon the death of a relative it is cut. If the deceased was a distant relative the hair is but slightly shortened. If a very near relative it is cut close to the head. The nearness of kinship is easily determined by the length of hair of the mourners.

A still more curious custom prevails in connection with the marriage ceremony. Before a Cocopah girl may become a bride she must be buried over night in the earth.

A hole is first dug in the sand deep enough to admit her in a sitting posture. Then a fire is built in the pit and is made to burn till the earth is thoroughly warmed. It is then extinguished, and the bride enters the grave and is buried to the neck in the earth. Here she remains till the morning, when she is ready for the marriage ceremony.

Occupying the region between these dwellers of the extreme southern portion of the desert and the tribe first described are the Mojave Indians and the Yumas. The Indians of these

tribes are of good stature, but they are dull, coarse, and unprogressive. They live in rude huts, curiously constructed of twigs, stones, and mud. The occupation of the men consists in an occasional visit to the fertile country in search of game, or to the mountains in search of turquoise, a gem much prized by nearly all the Indian tribes. The women make baskets and toys, blankets, and beaded ornaments to sell to curio dealers, whose agents make frequent visits among them to gather up these articles.

They live upon fish taken from the Colorado River, game taken in their occasional hunting excursions, and upon dishes prepared from cacti. A sort of government is maintained. They have their chiefs and medicine men, the latter being second in power and importance. The medicine men practice the healing art, depending more upon mysterious rites and incantations than upon herbs and medicines for their cures. Among the Indians of the northern desert it is the custom, as it is with some other Western tribes, to execute the medicine man when he shall have lost his third patient.

The Chemehuevi Indians are also desert-dwellers. They depend chiefly upon nature to supply them with food and other necessi-

From photograph by C. C. Pierce & Co.

A CHEMEHUEVI SQUAW AND CHILD

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ties. The desert cactus furnishes a large proportion of their food. The fibers of the plants are woven into a coarse cloth, which gives them clothing, and mud and sticks form the material for their houses. Like the other desert tribes, they know of no more desirable spot for an abiding-place; and no greater sorrow could come to them than to be told that they were to be transported to a land of "green fields and running brooks." The desert is their home. They know its peculiarities and its mysteries; it keeps them and lets them live, and they love it. Why should they long for that which is strange, and for which their natures are not adapted?

CHAPTER VI

A FUNERAL IN THE REGION OF DEATH

IN the great weird wastes which make up the Mojave Desert, Death is king. He sits enthroned in the terrible region known as Death Valley, and from that fiery pit he stretches forth his fleshless fingers over all the desert region, and exacts a fearful toll from the desert-dwellers and from those who travel through his domain.

To the Mojave Indians, a visit from the Great Destroyer comes as an event. In their lives few incidents occur to relieve the monotony of existence in that barren, isolated, and uneventful region, and the circumstances attending the taking off of a member of the tribe are made the most of. Even in the case of the death of the most humble member of the community the rites are elaborate and prolonged.

The traditions of the tribe do not record any funeral so memorable as was that of the

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A DESERT DWELLING ON THE COLORADO RIVER

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recently deceased chief, Sutuma, who had ruled his people for more than half a century.

Sutuma was of a royal line. His father, his father's father, and his father's father's father had ruled the tribe before him, even as his son is now presiding over the affairs of his people. Sutuma's father was chief of the Mojaves when Padre Junipero Serra, the founder of the California missions, came into the desert from the San Gabriel Mission in search of a fabled city supposed to be located in the midst of the great desert.

This city was reported to be a mighty pile of stately stone buildings, with walls and towers and domes and spires in profusion. Indians told the good father of having viewed the city from a distance and, believing that he was about to discover a civilized race of beings, Padre Junipero set out for the desert on an expedition of discovery.

When he had passed the barrier of mountains at what is now known as Cajon Pass, he looked out upon the great desert spread before him and lo! miles away, plainly outlined against the azure sky, was the wonderful city. It was, as had been described, a city of walls, and spires, and lofty buildings. With exultant cries the padre and his followers made haste toward it.

When they had traveled several hours the city seemed no nearer. When darkness compelled them to pitch their tents for the night it appeared to be as far away as when they had started toward it in the morning. When they arose on the following day and turned their eyes toward the point whither they had been traveling, the city had disappeared.

Disappointed and filled with alarm, the padre and his men prepared to return to San Gabriel. Before they had completed their arrangements for the return journey the city reappeared. When they had journeyed cityward half a day, and it seemed still as far away as ever, they met a party of Indians. These Indians were Mojaves, and at their head was their chief, the father of Sutuma.

By means of the sign language the Indians made the padre understand that the city was a phantom and did not really exist, and the disappointed party turned back. It was the padre's first experience with the mirage, that phenomenon of refraction and reflection which has lured so many men to their death in this same desert.

The Mojaves cremate their dead. When Sutuma passed away, his body was arrayed in all the splendor which his regal wardrobe

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85 THE DESERT "WHITE HOUSE"

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afforded and he was laid in state under the thatched roof of an open approach to the "White House" of the Mojave Desert. During the three days in which the silent form lay awaiting the final rites, it was surrounded by a band of mourners who uttered cries and lamentations unceasingly.

Old Morabico, the aged prophetess of the tribe, with eyes raised heavenward, recounted, in a chanting monotone, the joys of the Spirit Land whither the departed chief would go when the fires of the funeral pile had freed the captive spirit. Braves of the tribe hid their faces against the supporting posts of the structure and uttered doleful cries till exhaustion compelled them to give way to other braves who in like manner wailed their grief. Women and children, seated about the form of their late chief, added their voices to the mournful chorus.

On the evening of the third day, the body of the old chieftain was borne on the shoulders of six strong young braves to a huge pyre out on the plain some distance from the village. Here were found waiting the men, women, and children of the tribe and the official chanters, or poets-laureate who officiate on such occasions.

The body was laid upon the pile of fagots, and it was then securely bound to an upright stake and the torch applied. Two of the chanters took their places at the head and foot of the body, and the third began running about the pyre, chanting in a loud voice the virtues of the departed.

The Indians are natural poets. The simpleness of diction, the imagery of thought and directness of statement, render their improvised measures exceedingly attractive. Much of the charm of their poetry is lost in the translation and the writer cannot give, with any degree of accuracy a rendition of the poems thus weirdly chanted about the blazing pile. The following will give an idea of the words of the chanters :

"He is dead, he is dead !
It is Sutuma our chief, our beloved.
He lived an hundred years and did no evil.
He was the son of an hundred chiefs and he was wise.
His words were like drops of water on thirsty ground.
His deeds were good and they will live forever."

This poet continued to chant his improvised epic as he ran about the pyre, till he became exhausted, when he exchanged places with one of his companions who took up the strain and went on :

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THE FUNERAL PYRE

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"The sun is darkened because our chief is gone.
The stars weep dewdrops because he is dead.
The wind sings sorrowfully because he lies low.
When he was alive the earth was very glad.
His household rejoiced because of his good sayings.
His braves were fearless because he was strong.
He was great, he was good, he was full of wisdom.
He is dead and the earth groans with its sorrow."

From time to time the chanters changed places, and the poem of praise and sorrow continued till the fire burned low and died out. Then the old prophetess, Morabico, lifted from the embers a handful of ashes, which she cast upon the winds saying:

"To the Glad Land waft thy spirit. Be there happy ever as thou art entitled to be because of thy goodness and wisdom."

Then, in the blackness of the night, lighted only by the stars above, the picturesque band journeyed back into the lonely desert village, and the funeral was at an end.

CHAPTER VII

DESERT BASKET-MAKERS

IN the midst of a region so repellent that a large part of it remains comparatively unknown and unexplored, one art has reached a state of perfection unattained in civilized communities. This is the art of basket-making.

When, in 1539, Marcos de Niza, in his explorations northward from Mexico, entered the great desert region, he found peoples equipped with baskets of wonderful make and of marvelous fineness, such as the enlightened nations of Europe could not produce.

The basket-makers of that time had all the skill that is known to their descendants to-day. More than three and one-half centuries have passed since then, but it has marked no improvement in the art. It was perfect then ; it was perfect as far back as the traditions of that early day could trace it. It is an art to which civilization can add nothing; on the contrary, civilization threatens it with retrogression.

From photograph by C. C. Pierce & Co.

A MOJAVE INDIAN POUNDING MESQUITE BEANS IN WOODEN MORTAR

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Neither history nor tradition goes back far enough to determine when the art of plaiting and weaving had its birth, nor can we find evidence of a period when the work of the weaver has been less perfect. Progressiveness in those lines has been at the expense of the quality of the article produced. While the Indian is weaving a single blanket the modern loom will produce thousands, but never has loom been invented which could produce a blanket equal in quality to the hand-made blanket turned out by some of the Indian tribes who inhabit the arid lands of the West.

Almost all the basket-weaving tribes — and that includes nearly every tribe west of the Rocky Mountains — have legends pointing to the antiquity of the art. The Pomo Indians of Northern California tell that when the progenitors of their tribe were created, the Great Spirit furnished them with food in conical, water-tight baskets which served them as patterns for future work in that line. The Navajos learned the art by patterning after the baby-baskets in which the infant gods of war were sent to them, and the Havasupais believe that the daughter of the good god Tochopa taught the art to her daughter, from whom the tribe descended.

The basket plays an important part in the affairs of the desert Indian. It is his cradle in infancy; it is necessary in his domestic life, baskets being used in which to store his grain, cook his meals, serve his food, and carry his burdens. It figures in religious ceremonies, in marriage festivals, and in funeral rites. It forms a part of the decoration of his home, and serves him as a repository for his precious turquoise, wampum, and other treasures. His water-supply is brought and stored in baskets, the history and traditions of his tribe are woven into basket designs, and of late years, since the curio hunter is abroad in the land, the basket has become a very fertile source of revenue, bringing, in some instances, actual wealth.

Indian baskets may be divided into four general classes :

1. Burden baskets, such as are used for the carrying of loads of various kinds. These are generally of coarse material and are quite likely to be the work of old men who are incapacitated for other labor, or of young members of the tribe who are learning the art of basket-weaving.

2. Domestic baskets, including the granaries, cooking utensils, water-bottles, and other

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baskets in general use about the house. In this line may be classed the baskets in which are cradled the infants.

3. Jewel baskets, which are used for holding articles of value and trinkets prized by the householder, and baskets used solely for ornamental purposes.

4. Ceremonial, embracing such as have sacred significance and historical import, and those used at feasts and festivals and at marriages and funerals.

It may seem strange to speak of using baskets in which to cook food, but this is a common practice with certain tribes. Vegetables are boiled and mush is cooked in baskets, by dropping into the basket with the food stones which have been heated on live coals. Certain foods are also cooked in shallow baskets, which have been lined with clay, by placing live coals beside the food, and then skilfully twirling the basket in such a manner as to keep the food and coals constantly changing places, but at the same time separate from each other. By occasionally blowing into the dish the mess is kept free from ashes and the coals are kept glowing.

The designs which appear in Indian baskets are not merely artistic conceptions of the

weavers, but have significance. The sacred baskets are dedicated to certain purposes suggested by the designs woven in them. Thus the cobweb pattern in a Hopi basket signifies that it is to be used in conveying offerings to the "spider woman," as one of the deities or saints in the Hopi calendar is designated. Even the seeming miscalculation in the weaving of patterns is by design, as in the instance of patterns which apparently are calculated to run entirely around the basket but fail to join at the place of meeting. The opening is purposely left that the evil spirits may find a place of exit and pass out before they have opportunity to work harm to the possessor of the basket.

The colors in the design have their significance. Red means triumph or success; blue signifies defeat; black represents death; white denotes peace and happiness. Colors are also used to designate the points of the compass. Yellow symbolizes the north because, as the Indians explain, the light of the morning is yellow in the winter season when the sun rises toward the north instead of directly in the east. Blue stands for the west because the blue waters of the Pacific are in that direction. Red is the sign of the south, for that is the region of summer and the red sun. White

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A YUMA WOMAN WEAVING COARSE BASKETS

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represents the east, for the sky grows white in the east at the rising of the sun.

With most tribes red is a sacred color. It is symbolical of blood, which is the life and strength of man, and is therefore the source of his success and achievement.

A variety of material is used in basket-making, and by observing the kind of material used the expert collector is able to determine very closely the authorship of the basket, as well as to read from the designs the purpose for which it was created. Different tribes use different materials, and, naturally, those found nearest at hand. Southern California Indians make use of tule and certain fine grasses found in that part of the State. The Pomos, who are exceedingly adept weavers, use a tough slough-grass, capable of being split, and willow shoots. Havasupais use willows and certain fibrous plants found growing in the strange cañon which is their home. The Hopi Indians use yucca and grasses, while the Indians of Northern California make use of spruce roots and fibrous barks found in that locality. The Panamint Indians of Death Valley use year-old willow shoots, stalks of the aromatic sumac, fibers of the pods of the unicorn plant, and roots of the yucca.

Color is gained by various methods. Sometimes the bright red, green, and scarlet plumage of birds is used. Natural colors are much employed. The brown designs are mostly made by the use of maiden-hair fern stalks. Black is usually obtained by dyeing the material used with martynia pods; red from yucca roots and certain berries; green from willow bark; pink and various shades of red from the juice of the blackberry, and other colors and shades from various barks and fruits.

Basket-making has recently become a fad with white women, but the dusky woman need not fear the rivalry of her white sister. Civilization has too many claims upon her, and she has too little time and strength to devote to the work to permit of her spending weeks in searching mountain, valley, and plain for the material, and toiling months in the weaving, of a single basket. Even were she to do this, she could not weave into it the traditions of a race, the faith of a religion, the longings of a soul, and the poetry of a people. Until this is possible, the Indian basket will stand without a peer and its maker without a rival.

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MOJAVE BASKET-MAKER

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CHAPTER VIII

SHIPS OF THE DESERT

AN account of the desert which omitted to make mention of the burro would be woefully incomplete. The burro has been one of the most important factors in desert exploration and development. He is far more sagacious and enduring than the horse or mule. He is to the American desert what the camel is to the deserts of the Eastern hemisphere.

Few persons are aware that camels were once used upon the American deserts, but such are the facts. Ten years after the Pathfinder, General John C. Fremont, crossed the desert and traversed the Golden State, and four years after Marshall had thrilled the world with his discovery of gold in Northern California, Jefferson Davis, Secretary of State under President Pierce, consigned to Mr. L. P. Redwine, of Los Angeles, a lot of camels, to be used in transporting supplies to Government posts

located in the arid regions. The camels were delivered to Mr. Redwine, at Los Angeles, in 1853, and one of his first assignments was the transporting of a lot of supplies to the troops stationed at Fort Mojave at the eastern confines of the Great Mojave Desert.

Then, as now, a tribe of Indians dwelt in the vicinity of the fort, but, unlike the present time, they were hostile to whites, and unprotected parties fared but poorly at their hands. Redwine had completed the greater part of his journey to the fort when his caravan wound around the foot of a clump of hills and came unexpectedly upon an encampment of Mojave Indians. It is doubtful which party was the more surprised, the Indians at the sight of the strange cavalcade, or the whites at witnessing the frantic efforts of the redskins to put space between themselves and the approaching caravan. The sight of the camels was too much for them. It was the most complete rout in the history of the frontier.

A little later, when the caravan reached the fort, there was another surprise. The horses and mules corraled near the fort proved as timid as the Indians, and a general stampede ensued. The corral was broken down, and it took the soldiers several days to gather in the

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scattered herd. The camels forthwith became objects of hatred to the bluecoats.

As a means of transportation the camels were a success. The heat and drought and sands of the desert were as naught to them, and they throve on hardships that would have proven fatal to horses or mules, but their approach to a military post was a signal for a stampede of the stock, and the camels were marked for destruction. Every now and then, as opportunity offered, the soldiers would shoot down one or more of the camels till their numbers were so reduced that there were not enough for a caravan. Then the remnant of the herd was turned loose in the desert, to live or die as might happen. True to instinct, the liberated animals sought an oasis, and there they began to multiply. Later, however, hunters shot them for sport, and, so far as is now known, they have become extinct.

Redwine, the man who introduced the camels to the deserts of California, closed his earthly career in the desert town of Imperial in July, 1902. Much of Mr. Redwine's life was spent in the deserts of the great West, and this region of mystery, so terrifying to most men, seemed to possess for him a peculiar charm, and when the desert city of Imperial was

started he left his comfortable home in Phœnix, Arizona, to take part in the founding of this town.

When the camel project came to an end, the burro came to the front and has since held the foremost place as a means of desert transportation in localities not reached by the railroads.

The burro is a native of Spain, and he came to America at the time of the Spanish conquest. He carried the accoutrements of Cortez through Mexico and into the Montezumian capital. He was with De Soto when he journeyed into the heart of the American continent. De Balboa was indebted to him for the opportunity to discover the greatest of oceans. The padres who planted the chain of missions through Mexico, and who three hundred and fifty years ago reared the walls of the mission of San Xavier del Bac, in Arizona, had the assistance of the burro. The Franciscan fathers, who more than a century ago dotted the coast of California with another chain of missions, depended upon the burro for aid, and he did not disappoint them. And so for more than three centuries he has been in the procession of progress and has marched at its head.

The fortunes of the Spaniard have fluctuated, but the burro has known no rise nor fall

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in his prospects. He came as a beast of burden, and as such he has remained. It is all one with him — Spain or America. If he has a little to eat, a few hours for slumber, and is not too heavily burdened, he will patiently and contentedly perform his work and offer no complaint.

He clambers up the mountain trail where the horse could find no footing, carrying upon his back twice his own weight, and he picks his way along the brow of the mountain or the edge of mighty precipices as unconcernedly as though he were treading the pavement of a boulevard or the soft turf of green meadows. If his owner places too heavy a load upon him he makes no complaint. Not he! He simply lies down till the burden is made lighter. There is no arguing the question with him. He is indifferent alike to blows and pleadings. Not an inch will he stir till matters are adjusted. He knows his capacity, and his load must conform to it.

Few mines have been discovered in the mountainous or desert regions of the West without the assistance of the burro. The steel tracks of the locomotive which wind in and out of the cañons and passes and over the mountains were led thither by the burro. The

explorer has thrown the burden of his efforts upon him, and the prospector deems him indispensable. He is the veritable "ship" of the western desert, and many a man owes his life to his burro. He will live longer without water and scent it farther than any known animal save the camel.

As an example of the keen scent of the burro for water may be related the experience of two prospectors named Peterson and Kelley, who a few years ago attempted to cross the Great Mojave Desert on foot. They had with them, to carry their supplies, a burro. In passing from oasis to oasis they lost their way and the supply of water became exhausted. To be lost in the desert is a terrible thing, and the anxiety, coupled with the torturing thirst and the intense heat, drove Peterson insane. He left his companion and fled shrieking across the plain. Kelley picketed the burro and went after Peterson to bring him back, but he was unable to overtake him. He returned to the trail to find that his burro had broken his tether and was moving across the desert at a leisurely pace. He followed, but the animal was so far in the lead, and he was so exhausted from his efforts to overtake Peterson, that he could not come up to him.

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117 BEARING THE REDMAN'S BURDEN

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Night came upon him, and it soon became so dark that he could not distinguish the burro and he had to follow him by the footprints in the sand. When it became too dark to distinguish them he still staggered on in sheer desperation.

By and by his heart gave a great throb. Before him, outlined against the sky and seemingly suspended in the air, was a form which he knew to be either his burro or an apparition. He hurried forward and lo! standing upon a sharp rise of ground and facing him was his lost burro, who seemed to be awaiting him for a purpose, for when he came up to him the animal turned and led the way down the incline to a spring of living water.

Kelley gave a shout of joy and plunged bodily into the spring. After he had soaked his parched skin and moistened his lips and throat, he crawled out and went to his burro, which was browsing upon the green herbs growing about the place. Throwing his arms about the neck of the animal he gave the creature a hearty hug and a kiss. If this mark of affection surprised or touched the burro he made no sign. He merely nipped another mouthful of the herbage and continued chewing.

When Kelley had taken a fresh supply of water he retraced his steps to the point where the burro had broken away. It was fully ten miles. There is no doubt but the animal had scented the water all that distance, and his eagerness to get to it had led him to strain at his fastenings till he broke loose. Poor Peterson did not survive. Kelley found his dead body the next morning four or five miles from the point where he had left the trail.

The burro draws no color line. He affiliates as readily with the Mexican and the Indian as he does with the whites. The desert tribes have little success with horses, and even the rugged bronchos cannot endure the heat and thirst incident to life in that region, but the burro is as much at home and seemingly as contented there as are his brethren who live and labor in the alfalfa meadows of the fertile belt.

The burro is never vicious. Unlike his cousin, the mule, he knows no guile. As a playmate for children he has no rival. He humors them, bears with them, and lets them work their own sweet wills with him. He requires little care, asks little to eat, and seems simply to crave existence.

Let the artist in search of a model for con-

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TAKING ON THE CARGO

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tentment go to the burro. There he will find contentment personified.

He does not sigh and moan that he, alas,
Is but a mongrel, neither horse nor ass.
Content that being neither, he may do
His work and live as nature meant him to.

CHAPTER IX

THE STORY OF A STREAK OF YELLOW

IF "the love of money is the root of evil," it is, as well, the germ of progress. It was the imaginary glitter of the yellow metal that lured De Soto across the continent to the Mississippi and beyond; it enticed De Balboa to the shores of the Pacific, led Cortez through the land of the Aztecs, and its magnetism drew Alvarado down into Central America and carried Pizarro to the conquest of Peru; it dragged Coronado across the arid plains of Mexico, New Mexico, and Arizona in search of the fabled land of Cibola, and, in fact, its gleaming has explored and exploited the Americas from Alaska to Cape Horn. It has led man to brave the perils of the desert, and as the result prosperous towns have sprung up in that dread region, and millions of dollars of wealth have been wrested from its treasure-house. Just what this continent would now be, had it not been for the glitter of the yel-

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THE PROSPECTOR SETS FORTH

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low dust, it is hard to estimate. It is probable that the dusky savage would still hold dominion over the land.

The prospector is the advance agent of progress, civilization, and prosperity. He has spied out the country,—with the aid of his faithful burro,—and has marked every trail, preceded every stage route and railroad, and founded the greater number of towns on the western half of this United States.

He it is who has unlocked the treasure-house of the continent and poured into the coffers of this Republic the golden stream which has made her the first nation on the globe. It is for the sight of a yellow streak in his pan that he has been tempted to endure the fatigue, cold, and hunger of the mountains, and the heat, thirst, and horror of the desert.

The prospector is a man of small pretentions, of peaceful disposition, indomitable will, boundless perseverance, remarkable endurance, undoubted courage, irrepressible hopefulness, and unlimited hospitality. He is the friend of every man till he has evidence that the man is his enemy, and he is the most respected man in the mining regions of the West.

Of what does the prospector's outfit consist? That is a question the writer put to one of the ilk who was just starting out for the desert.

"Plenty of bacon, son," said he, "for that 's whar ye git yer grease fer to fry yer flap-jacks, yer stock fer soup, an' it gives ye rines fer the burro to chaw. Next ye takes rice, fer it don't take up much room an' it swells like all-git-out when ye gits it in the pot. Comes mighty handy in yer soup, too. Half a dozen onions an' a few taters — not many, fer ye can't tote 'em — them 's fer soup, too, an' then the flour. Flour 's the principal thing in the grub line. A few beans is good an' they swells like the rice. Then thar 's the tent canvas an' the blankets an' the pick an' shovel an' pan, fer washin' dirt, the mortar an' chemicals fer testin' rock, an' the cookin' outfit. There 's a knife, a fork, a spoon, a tin plate an' cup an' the fryin' pan, an' thar ye are."

The prospector no longer deems it necessary to seek entirely new territory in which to prosecute his search for the precious metal. He has learned that good results are obtained on ground many times prospected. It takes sharp eyes to detect traces of the precious stuff — not only that, but keen judgment and technical knowledge coupled with experience.

In the early days of mining in this country it was in the placer fields that the prospector reaped his fortune. In California, successive

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129 AN AGED PROSPECTOR AT MOUTH OF HIS MINE

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ages of erosion had worn away portions of the gold-bearing veins of the Sierras, and the rains and brooks and rivers had distributed the metal along the valleys and plains where it but awaited the test of the pan to disclose its whereabouts. In ten years after the prospector began his wanderings through the State there were taken from the placer diggings more than $500,000,000 worth of gold. In the year 1875, $20,000,000 worth were washed from the sands of California Gulch alone.

When the placer fields were practically worked out the prospector began looking for "mother lodes," as they termed the veins which had furnished the dust and yellow lumps they had been gathering from the sands in the placer diggings. In this search the real skill of the prospector comes into play.

Gold is found in a variety of rocks. Its usual home, however, is in quartz, although a few of our richest mines have been found in other rocks. The prospector must be able to read the book of nature closely.

He starts from the placer fields to search for the mother lode. He must determine in what direction to prosecute his search. The fine particles of gold which have been disseminated through the soil must originally have

come from higher ground. One thing to determine is whether, since the gold has been laid down, there has been displacement or upheaval. If not, it is evident that somewhere upstream he must look for the vein, but the question is : Where. There are mountains and valleys upon every side, and in any one of these may lie the object of his search.

He circles about, looking for "float," as the small pieces of disintegrated quartz or rock are called. If he finds one piece he seeks a second and a third, that he may get a line or trail to the point from which they came.

We will suppose that he finds several pieces of float at intervals on a certain line. He follows these to a point where two cañons or valleys join. Here is another puzzle. He must again turn to the book of nature and closely scan her pages. His mode of reasoning will be something like this :

"Here are three pieces of float. One I found back at the mouth of this valley. Another I picked up forty rods back, and here, where the cañon splits, I find the third. Now from which branch did they come? They could not have come from the sides of this cañon, for they bear away from both sides where I found this last piece. Now, if they

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AN ANXIOUS MOMENT—LOOKING FOR THE YELLOW STREAK

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had come from the left branch they would have landed over against the right side of the valley, for there is where the débris from that gulch has piled up. The float was on the left side and therefore must have come from the gulch on the right. They did not come from far, for the edges have not been worn smooth by the action of the water and by friction with other pebbles. Then, too, this last piece is too large to have been carried any great distance."

The prospector then takes the right-hand gulch and soon finds other pieces of float and knows that he is on the right trail. By and by he finds his quartz vein outcropping, or he has the good luck to uncover it. He examines the rock carefully and obtains some promising specimens and proceeds to test them. In his mortar he grinds the specimens to a fine powder. This powder he roasts in a big iron spoon till it is cherry red. He finds that the ore fuses, indicating a metal of some kind, so he drops a bit of blazing paper into it and notes that the flame burns brighter. That indicates the presence of nitrates and chlorides. Then he takes some of the oxidized ore and puts it into a tin cup and covers it with iodine. After it has stood two or

three hours he soaks a piece of filter paper in the solution and sets fire to it. If it gives out a purple color in burning he knows there is gold in it. How much must be determined by assay, but it is encouragement enough to lead him to select the most promising location and stake his claim thereon. Then he loads his burro with specimens of his ore and returns to civilization to seek an assayer.

If the assayer finds large proportions of gold in the ore the prospector has little trouble in finding capital to interest itself in his property to the extent of developing it for an interest, and perhaps his fortune is made. On the other hand, the assay may prove unfavorable and show returns so small as to make it unprofitable to mill the ore, and the matter ends there. The prospector then starts out after another will-o'-the-wisp. With many it is a lifelong chase, with a pauper's grave at the end of the course. It is a fascinating life, however, and once a prospector is, in most cases, always a prospector.

To some, fortune comes on the brink of the grave, to some never, and now and then the most inexperienced "tenderfoot" stumbles upon wealth at the very outset of his search. There was the notable case of Dave Moffatt.

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137 AN AËRIAL FERRY—PROSPECTORS CROSSING COLORADO RIVER

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He had no technical knowledge of mining and absolutely no experience. He started out in the hills prospecting and chanced upon a deer's horn lying upon the ground.

"That 's a sign of good luck," reasoned he, and he fell to digging where had lain the horn. He struck it rich, named his claim the "Deer's Horn," sold out for forty thousand dollars—and got cheated.

Even the most experienced prospector believes in luck. They believe that experience counts for little if a man is not naturally lucky. They still refer to the late multi-millionaire Stratton as an example of the lucky man. He found his famous Independence mine where hundreds of experienced prospectors had repeatedly looked over the ground. They tell how the cows once cropped the grasses over the richest mines of Cripple Creek, while their owners cursed their luck for not being able to strike pay. No amount of hard luck, however, will convince the prospector that his good luck is not waiting just ahead, so he totes his pick and pan over mountain and plain, out into the heart of the desert, up and down the face of the earth, till he stakes his final claim—six feet of earth—where the lucky and unlucky are on an equal footing.

Many rich strikes of gold have been made in the Colorado and Mojave deserts. The possibilities of these deserts are not exhausted, however. Prof. G. E. Bailey of San Francisco, who was one of a party of Government surveyors who recently made an exhaustive study of the Mojave Desert, says :

"We have heard a great deal about Alaska as a gold-producer, but the Mojave Desert is now more talked about in the financial centers of the East than Alaska, and the day is not far off when there will be a greater rush to this desert than ever there was to the northern zone.

"Take the desert as a mineral-bearing region, and we have not begun to discover its vast wealth. There are gold-fields here which will astonish the world. Every little while some prospector brings in float rock, sparkling with the precious metal which has been broken from a ledge as rich, but that ledge has been hunted for in vain. The day will come when these rich ledges will be located and contribute to the world's wealth of gold."

Speaking of the recent placer strike near the town of Needles he says :

"The real wealth of the ground has not been determined, but gold, coarse gold and nuggets of good size, have been discovered. The real story of the strike is about like this :

"'The Clark road is building down a cañon between Needles and Goff, and the men had occasion to drive

several piles. One of the piles was split and was withdrawn, when several nuggets were found imbedded in the pine. Word of the strike was sent quietly to San Francisco, and several well-known men from there came down and located. I believe the field is to develop into a permanent one, and may yet grow to large proportions.'"

The Randsburg district was discovered in 1894, and it has developed into an extensive gold-producing district of which Randsburg and Johannesburg are the chief towns. That field has yielded millions of dollars of gold and is yet in an early stage of development.

CHAPTER X

DESERT BORAX MINES

IN the most desolate, dangerous, and terrifying locality in the United States, if not in the whole world, lie the largest known deposits of borax in the universe. Death Valley is the repository of more mineral wealth than has ever been brought out of the Klondike, but Death stands guard over the hoards of gold, silver, copper, salt, niter, borax, and precious stones known to abound there.

Every year prospectors brave the terrors of the desert and enter the dread portals of the gateway to the valley. This gateway is through a range of mountains to which have been given the most appropriate name of Funeral Mountains. Every year new tragedies are enacted in the valley and new graves are made under the shadow of these mountains, or else the victims, finding no grave, lie upon the burning sands and stare with sightless eyes at the mountains which bound the valley.

From photograph by C. C. Pierce & Co.

143 A TRACTION ENGINE HAULING BORAX FROM DEATH VALLEY

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Where fortunes are to be made lives are held cheap, and nature's great deposits of wealth in the valley have tempted man to pit his ingenuity, strength, and endurance against the powers of the great destroyer.

In the United States the supply of borax is limited to the States of California, Oregon, and Nevada. Until within the last ten or twelve years the supply of borax in this country was derived from evaporating the water of Clear Lake and several alkaline marshes in California and Nevada. In 1890, it was discovered that the crust of borax which formed in such places was but a secondary deposit from the main body of the mineral drug stored below. Then began the real history of the borax industry in this country.

It is said that borax is never found in nature except in craters of extinct volcanoes. Be that as it may, certain it is that in California all the deposits yet discovered lie at the bottom of those bowl-shaped valleys which are known to have been once the outlet for the vomitings of prehistoric Pélées.

The presence of borax is indicated by the snowy appearance of the valley bottoms, and to the uninitiated these white stretches, when seen from a little distance, might well be

mistaken for snow-fields. Many a life has been lost in attempting to cross these snowy plains, for beneath the thin shell of salts lie fathomless depths of poisonous waters, for the funnels of those extinct volcanoes are filled with solutions of a multitude of mineral drugs such as were never brewed in chemist's laboratory.

In Death Valley thirty thousand acres of borax, niter, soda, and salt deposits have been located. The valley is literally a vast chemical laboratory where Nature has compounded and stored drugs by the millions of tons. It is the drug store of the universe.

There are several different forms in which borax occurs in nature. It is found in solution in some of the lakes and pools, from which it is obtained by evaporation; in salts or crystals known as boreat, which require no other treatment than to be dissolved in vats of boiling water and then allowed to crystallize again, and it is found in the form of "cotton balls," as the round masses of ulexite are called, masses varying in size from a rifle-ball to a bushel basket. The finest borax on the market is made from the "cotton balls." These balls, when broken, are fibrous and woolly in appearance, hence the name.

When it was discovered that the real de-

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posits of borax lie beneath the surface deposits, a genuine borax mine was located and developed at what is now known as Boreat, twelve miles north of Daggett, on the line of the Santa Fé railroad, where the reduction works are situated. The wonderful richness of this deposit has led to further explorations, and the remarkable finds in Death Valley have resulted.

When brought to the works at Daggett, the lumps of borax are fed into the mammoth iron jaws of a crusher which breaks them into lumps of an uniform size about the bigness of the average chestnut. These lumps are fed to the grinder, which reduces them to powder, and the powder, in turn, is passed through rollers like those used in the manufacture of the finest grades of wheat flour. From these rollers it comes forth as fine as the product of the wheat from which our most choice bread is made. Then it is mixed with carbonate of soda, which is mined in Death Valley, and the mixture is thrown into vats of boiling water and agitated by means of revolving wheels till the mass is dissolved and thoroughly mixed. From this compound are precipitated two powders, one the borax of commerce, the other the well-known product styled sal soda.

Borax from Death Valley first entered the markets about twenty years ago. It was mined from deposits found in the Calico Mountains and from one or two sinks in the valley, and it was hauled out of the valley and one hundred miles across the desert in wagons drawn by mule teams of from eighteen to thirty-two mules each.

During the five or six years following the opening of the mines, large quantities of borax were taken out and placed upon the market. Then, in the spring of 1888, the mines were closed because it was impossible to find men to work the mines or drive the mules. It became known that few men who went into the mines came out alive. At the end of six or seven months the miner succumbed to the terrific heat and the poisonous atmosphere, or else he was a broken-down invalid incapable of doing further work. It came to be considered simply a form of suicide to engage in the work, consequently the mine-owners were unable to continue operations.

The desert borax wagons are a marvel of themselves. The wagon proper is made to hold ten tons of borax. It has a bed sixteen feet long by four feet wide and sides six feet high. The hind wheels are seven feet, and

From photograph by C. C. Pierce & Co.

A MONUMENT IN THE LAND OF THIRST

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the front wheels five feet, in diameter. They are fitted with tires eight inches wide and an inch thick, and an empty wagon weighs seventy-eight hundred pounds. In addition to this combined weight of wagon and load, amounting to about fourteen tons, is the trailer, as is called the water wagon, which it is necessary to attach to the train in order that man and beast may not perish of thirst on the journey. Altogether, the plucky teams have to haul through the yielding sands about twenty tons —nearly or quite one ton to the beast.

A traction engine is also employed in hauling the product of the mines. This is a huge concern weighing hundreds of tons and doing the work of several mule teams. This machine has not been found adapted to all features of the work, however, and is not destined to supersede the mule wagons.

A little more than twenty years ago borax was worth, in this country, in the neighborhood of one dollar per pound. It is now being mined,—even under the present disadvantages, —prepared, and marketed at a profit at about ten cents a pound, with a prospect of still lower figures in the near future.

CHAPTER XI

OTHER MINERALS FOUND IN THE DESERT

GOLD and borax, which have been given chapters in this work, are by no means all the minerals found in the California deserts. The deserts have tempted the prospector ever since California became known as a mineral field. For a time gold was the prime object of his search, but later it became known that other minerals were capable of yielding profits quite as great as the yellow metal, and he has become more critical in his observations. His care has been liberally rewarded.

Borax was one of the first of the mineral products to attract his attention. The discovery of large deposits of this in Death Valley was followed by the discovery of immense beds of niter, of sulphate of soda, nitrate of soda, and other mineral drugs in the same vicinity.

The gold belt of the Mojave Desert has

From photograph by C. C. Pierce & Co.

A TYPICAL DESERT MINING TOWN

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been traced from the town of Mojave to Death Valley, a distance of one hundred and fifteen miles. The belt varies in width from two to ten miles. Death Valley is known to contain rich deposits of gold in other portions of the desert. All along these gold belts, silver is also more or less abundant.

The silver mines of the Calico district have become famous for their yield of silver bullion. These mines are about six miles north of the Santa Fé railroad and near the station of Daggett. The belt extends in an easterly and westerly direction, and has been traced and developed for a distance of ten miles. The rocks of this region are violet or brown rhyolite, often porphyritic ; green, yellow, and white tufa ; greenish hornblende andesite ; yellow and green breccia.

Copper, lead, tin, zinc, iron, manganese, baryta, gypsum, sulphur, onyx, marble, asbestos, and gem stones are also found in the deserts.

The minerals are scattered over the many thousands of square miles of territory. The difficulties of transportation, coupled with the lack of water, have greatly retarded the development of the known mineral fields, as well as prevented the finding of other rich deposits which doubtless exist.

The character of the mineral rocks is multitudinous. In the Waterloo Mines in the Mojave Desert, ore is found in a belt of jasper which yields more than one thousand ounces of silver to the ton.

Twenty-eight miles east of Daggett are large bodies of iron ore — the largest known on the Pacific Coast. These deposits have been practically undisturbed because of the distance from railroad and the lack of water and fuel to mine and smelt the ores. When a railroad is laid to the locality this field will prove a wonderful source of wealth to those who secure possession of it.

Five miles south of Oro Grande are rich veins of copper which are found very near the surface. These deposits were discovered by the Mormons who settled on the Mojave River several years ago.

Variegated marble quarries have been opened twelve miles northeast from Victor, in which are found marbles of wonderful beauty and fineness. Shades of crimson and gray, cream, rose, white, pale blue, black, chocolate, and yellow are mined from these quarries, the ledges of which outcrop and stand above the surrounding lands. Some of these marbles approach in beauty that of the finest onyx.

The Colorado Desert contains numerous valuable gold mines, as well as silver, copper, tin, and other important minerals. Cement and asbestos are found in abundance in certain sections. Rich deposits of the latter mineral are found in the vicinity of Indio and at Palm Springs. Lithia rock and fine clay are mined in certain sections and in 1902 the richest known tourmaline deposits in America were found at Mesa Grande. There is an interesting story connected with the finding of these gems.

Mesa Grande is an elevated plateau or tableland. On the lower adjacent lands water is found, and ranchers — mostly Mexicans — have established themselves. Ever since the valley became settled the tableland has been a favorite playground for the children. A portion of the mesa is scantily covered with loam, where grow cacti and other specimens of dry-weather plants. A large portion of the mesa, however, is barren and the rock lies exposed, gray, mottled, or white beneath the glaring sun which shines ever from a cloudless sky. Here and there the granite and gneiss show a belt of snowy white quartz which gleams in the sunlight, forming a pleasing contrast to the darker rocks in which it is set.

One day, while playing among these rocks, one of the children found a delicately tinted transparent pebble. When held up to the sun it emitted brilliant reflections and sparkled and scintillated like living flame. A cry of delight brought the other children to the spot, and then began a search for more of the pretty stones, with the result of the gathering of a dozen or more of the sparkling stones that afternoon. After this, frequent trips were made to the mesa in search of the pretty pebbles, and scarcely a house in the vicinity but contained collections of the beautiful playthings.

One day a professional gem-cutter chanced to visit the valley under the mesa and in a basket of playthings he saw some of the bright pebbles. He examined the stones and learned where they had been found. Then he prospected the locality and found the gem-bearing ledges and staked claims covering the richer portions of the field. Since then some rare and valuable stones have been taken from the mines, gems equal to those of Ceylon, Brazil, or Siberia, which countries have heretofore supplied the world with these gems. The gem-bearing ledges extend over two or three hundred acres.

Salt is another valuable mineral found in both the Mojave and Colorado deserts. The famous salt-fields of Salton are in the latter desert, but they have a story all their own, which will be told in another chapter.

CHAPTER XII

A REMARKABLE HARVEST-FIELD

THE most remarkable harvest-field in the United States, if not in the whole world, is located in the heart of the Colorado Desert. The spot is known as Salton, and it lies 265 feet below the level of the sea.

The crop which is harvested is salt. So plentiful is the natural deposit of this necessary article that it is plowed with gang-plows, is scraped into windrows as hay is raked in the field, and, like hay, it is stacked into heaps from the windrows and is then loaded into wagons and later into cars to be carried to the reduction works three miles away.

There are about one thousand acres in this saline field. When one looks upon this glittering, sparkling, and scintillating field, which lies like a great patch of snow dropped down into the midst of the burning sands of the plain, he is reminded of that passage of Scripture which says:

163 PLOWING SALT IN COLORADO DESERT

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"Lift up your eyes, and look on the fields; for they are white already to harvest."

This field is literally white to harvest and a most phenomenal harvest it is. Over a briny, oozy marsh lies a crust of salt six to sixteen inches thick. As often as removed, the crust quickly forms again, so that crop after crop is taken from the same ground. In fact, although these harvests have been going on nearly twenty years, and two thousand tons of marketable salt are annually taken from the beds, but ten acres of the one-thousand-acre field have been broken.

The laborers employed in breaking up the salt crust, in loading the salt onto the wagons and taking it to the mills, in cleaning and preparing it for the market, are mostly Japanese and Indians. In the summer season the temperature reaches 130 to 140 degrees at Salton, and white men are unable to endure the work exposed to the burning rays of the sun.

The ease with which the salt is procured in this field makes it a valuable one. At very little expense the salt is made ready for market, and it brings from six to thirty-six dollars per ton, according to the grade.

The Coachella Valley, in which this great field of salt lies, is ninety miles long and from

ten to thirty miles wide. Its one thousand six hundred square miles of territory lie wholly below the level of the sea, its greatest depression being 275 feet. The southern portion of the valley is devoid of vegetation, save where irrigation has been introduced, but about the northern portion of the valley the sage and mesquite have obtained a foothold in the sandy soil. Near Indio, in the northern portion of the valley, an artesian well was drilled a few years ago and a copious supply of water was obtained. Now more than two hundred and fifty of those wells are pouring their waters over the thirsty soil, and a large tract of land has been brought into a high state of cultivation. The lands about the salt-fields, however, are too strongly impregnated with salts and alkali to offer any inducements to the rancher now or in the future. The constant harvest of salt, however, is a rich enough return for the lands thus unfitted for agriculture.

This desert salt is remarkable for its fine quality. An analysis made in San Francisco shows its constituents to be as follows: Chloride of sodium, 94.68 per cent.; calcium sulphate, .77 per cent.; water, .75 per cent.; magnesium sulphate, 3.12 per cent; sodium sulphate, .68 per cent.; total, 100 per cent.

Until 1901, the title to the Salton lands was vested in the Government, and the company which was reaping the harvest had no title to the property and no legal right thereto. There is an interesting story connected with the change of title.

This concern, the Liverpool Salt Company, had a competitor for the salt trade of the Pacific coast in the Standard Salt Company. The Salton fields are reached by means of the Southern Pacific Railway, which road has the handling of all the product of the salt-fields. The Standard Company alleged that the railroad people discriminated against it in the way of freight rates, excluding the Standard people from the coast markets, and thus securing a monopoly of the trade for the Liverpool Company. This led the managers of the Standard Company to look into the titles of the salt-fields. It was then discovered that the company operating was without title, and that the lands were unallotted Government lands.

The attention of the Government officials was called to the fact that the Liverpool people were trespassers, and an order was issued for the company to vacate. A bill was then introduced in Congress providing for filing claims upon saline lands, and the bill passed

the Senate January 22, 1901. It yet required the signature of the President to make it a law, however, and it was then that matters became interesting in the desert.

Both companies congregated men on the lands adjoining the salt-fields, prepared to race to the choice portion of the field to stake claims the moment the wire should apprise them of the signing of the bill. Each company had an agent in Washington ready to telegraph the news the instant it became known, and each company had a man at the telegraph station at Salton, three miles from the field, to take the message to the men the moment it came.

The Liverpool Company felt confident of winning the race, for the company owned a spur track from the main line of the railroad to the salt-fields, and upon this line was placed a hand-car, manned ready to pull for the fields the instant the dispatch should arrive. This car could easily outstrip the fleetest horse, the yielding sands making it impossible for a steed to make rapid progress.

The manager of the Standard Company, however, did not depend upon horse speed, mule speed, or car speed. There are in Southern California an average of 316 cloudless days

each year. He pinned his faith to the weather, and his confidence was not betrayed.

At 2.45 o'clock, the afternoon of January 31st, two telegrams arrived at Salton at about the same time. One was for the manager of the Liverpool Salt Company and the other was for the manager of the Standard Salt Company. The contents of the telegrams were identical. They told that the President had signed the bill which opened the lands in the salt-field to entry. In a moment the hand-car was off, the men pumping for dear life. Before they had gone a dozen rods there shot from the station a blaze of light—a message flashed by mirrors held in such a manner as to catch and reflect the rays of the sun. To the watchers three miles away, who were waiting for the signal, which had been prearranged, it was as though the station had burst into flame. At the sight of this signal the men rushed to the salt-fields and set the stakes and posted the notices required by law. When the hand-car men arrived it was all over, and there was nothing for them to do but to return and swallow their chagrin.

After the triumph of the Standard Company in this peculiar race, a compromise was effected whereby the Liverpool Company, which owned

the mills and apparatus and the spur track, and all other equipments for the operating of the field, resumed the ownership of the field, and the Standard Company was granted concessions which placed them on an equal footing with their competitors in the markets on the coast.

In June, 1891, the laborers at Salton were treated to a surprise. They found the country filling up with water from an unknown source. A great deal of apprehension was felt, as it was thought that the water undoubtedly came from a crevasse which had been opened communicating with the sea. If such were the case it was to be expected that Salton would soon be 265 feet under water, for water seeks its level.

The flow of water continued till an area ten miles wide by thirty miles long was covered to a depth of six feet ; then it was ascertained that the water was coming in from the Colorado River, which had risen above its banks and was cutting a channel across the desert, threatening to convert a large section of the Coachella Valley into an inland sea.

This inundation was caused by the co-equal rise of the head waters of the Colorado and Gila rivers. The waters of the lower Colorado rose five feet above high-water mark and con-

tinued to pour its waters into the desert till the flood subsided. After the flood had abated, the sands of the desert and the fiery sun soon drank up the lake thus suddenly formed.

Inquiry brought forth the information that a a similar inundation had taken place in 1849. At that time, however, the waters subsided before so large a lake had been formed.

It was these inundations which gave birth to the idea of converting a part of the waters of the Colorado into an irrigating canal for the purpose of reclaiming the lands of the valley.

CHAPTER XIII

DEATH VALLEY

OF the 157,000 square miles of territory which comprise the State of California, 35,000 square miles are desert. Of this area more than two thousand square miles lie below the level of the sea. The lowest point in all this submarine field is found in Death Valley, the most terrifying and forbidding region in the world.

Death Valley has been rightly named. It was christened with blood and has ever lived up to its title. Sixty-eight out of the seventy Mormon emigrants who wandered into that dread region, in 1849, gave their lives to the christening. The story of their terrible death from tortures of thirst and agonies of heat is too horrible to print. They came into a nameless region and their bodies were there consigned to unmarked graves. There lie today the remains of all that party save two. These two, when they came away, left

From photograph by C. C. Pierce & Co.

TEAMING IN DEATH VALLEY

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behind them a region with a name—Death Valley.

Since then other names have been given to localities within this terrible region, and they have been, for the most part, names in keeping with the awfulness of the place. The mountains which tower above the fearful sink, shutting it off from the great desert outside, have been named "Funeral Mountains." There is "Furnace Creek," whose waters, bitter, poisonous, and unpalatable, flowing through burning sands, become heated as though literally flowing from a glowing furnace. There are "Ash Meadows," a plain strewn with scoriac débris—a Sodom of the Western world. There is the "Devil's Chair," a gigantic and realistic throne worn by erosion from the huge bluffs which form the portals to the valley, a seat appropriate to his Satanic majesty were he to choose a throne upon earth. Indeed, according to a notice posted by a Government surveying party in the pass into the valley, the home of the chief of imps is not far distant. The notice reads thus :

DRY PLACE
PLEASE KEEP OFF THE GRASS
SARATOGA SPRINGS

SODA, BORAX, AND NITER
MINERAL MONUMENT
DEATH VALLEY, 365 FEET BELOW SEA-LEVEL
105 MILES TO RANDSBURG
85 MILES TO DAGGETT
20 MILES TO EVANS' RANCH
30 MILES TO RESTING SPRINGS
10 MILES TO OWL SPRINGS
10 MILES TO SALT SPRINGS
32 MILES TO COYOTE HOLES
ERECTED BY THE BAILEY GEOLOGICAL PARTY
CHRISTMAS DAY, 1900
20 MILES FROM WOOD
20 MILES FROM WATER
40 FEET FROM HELL
GOD BLESS OUR HOME

The pool known as Saratoga Springs, where this monument is erected, is one of the wonders of the valley. From the bottom of the circular crater-like basin, which is about thirty feet across, bubble several springs whose tepid waters are strongly impregnated with sulphur. These springs keep the basin full and overflowing, and the waste waters seek a natural depression near and form a lake several acres in extent. The waters are not fit for use, however, being rank with alkali and other mineral substances.

Death Valley has an area of nearly five hundred square miles. It is fifty miles long and

varies in width from five to ten miles. Its greatest depression is 480 feet below sea-level. In this limited area more men have perished than upon any other similar area in the world, the great battle-fields excepted. The remarkable mineral wealth of the region has been a glittering bait to lure men to destruction. There are in the valley golden ledges, the ores of which run in value to fabulous sums per ton. There are vast beds of borax, niter, soda, salt, and other mineral drugs. There is a single salt-field in the valley thirty miles long and from two to four miles wide, where salt lies a foot or more deep over the entire field. Turquoises, opals, garnets, onyx, marbles, and other gems and rocks of value exist in abundance. The valley is a storehouse of wealth, the treasure-vault of the nation, the drug-store of the universe, but Death holds the title.

Although Death Valley is the most formidable spot in all the desert region, it is not wanting in beauty. Color effects such as artist never dreamed of are here to be seen. It is not the coloring given by vegetation, however, for verdure is lacking. There are no velvety green meadows, neither are there fields of blooming flowers. The coloring of the mountains and plains of this region are penciled in

unfading and unchanging colors. These colors are mineral and chemical and are blended in rare harmony—laid by the Master Hand which carved this remarkable region out of the edge of the Western continent.

Green and blue of copper, ruddiness of niter, yellow of sulphur, red of hematite and cinnabar, white of salt and borax, blend with the black and gray of the barren rocks and the dark carmine and royal purple and pale green of the mineral-stained granites.

Heat and thirst are not wholly responsible for death in this valley, for some have frozen and some have drowned within its confines. Thermometers register as high as 140 degrees in the valley, but towering above the region are snow-clad mountains, and it sometimes happens that the winds, which in the day waft waves of furnace-like heat through the valley, bring down, by night, the frigidity of the upper region, chilling to death the unprotected prospector who may chance to be below.

Again, in this thirst-cursed region, which knows not the blessing of the shower, sometimes occur terrible cloudbursts which send solid walls of water tearing down the mountain-sides, carrying death and destruction in its wake.

From photograph by C. C. Pierce & Co.

INDIAN CHIEF LYING IN STATE

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Nor are these all of the possible dangers. In this great drug warehouse arise deadly vapors, and the passing winds whirl clouds of poisonous dust through the air, which, if inhaled, will eat the vitals and eventually rob one of life.

Notwithstanding the terrible character of this valley, there is an instance where two persons sought it for the express purpose of cheating death. A Brooklyn lawyer named Whittaker, and his wife, were both stricken with consumption. By advice of their doctors they sought the Pacific coast, going to Los Angeles. Physicians there advised them to seek a drier climate; therefore, in a wagon equipped with a camping outfit and a supply of the necessities of life, they sought the Great Mojave Desert. Here, indeed, was air dry enough for their purpose. They drove from oasis to oasis, and soon found themselves growing better and stronger, notwithstanding the privations they were forced to endure. They determined to make their home somewhere in that vast solitude, but where was a question yet to be decided.

They continued to wander over the barren wastes till one day they came to the gateway to the terrible valley of death. It is not

certain that they were aware of the identity of the locality. Be that as it may, the horses were directed valleyward and they passed through the portals which have admitted so many and discharged so few.

Inside the valley they found a man guarding a borax mine which had been closed down because men could not be found to brave the perils of the valley to operate it. Here Whittaker and his wife rested a few days and then they pressed on into the valley. Their host tried to induce them to turn back, but they would not heed him. Onward they journeyed till they found a little cañon in the side of the mountain which formed a portion of one of walls of the valley, and this spot they named home and made there a permanent camp. This was in 1893 or 1894. Seven years later the woman died. Whittaker continued to live in the old home, but the loss of his wife, coupled with the solitude, the heat, and the poisons of the atmosphere, was too much for his reason and he went mad. In this condition he was found by a prospector—mad, but rich, for the floor of his cabin was thickly littered with golden nuggets.

A great railroad, the San Pedro, Los Angeles and Salt Lake road, is now spanning

the desert. This line will pass within a few miles of the entrance to the valley, and when it is completed the real conquest of the valley will begin. It is predicted that a branch road will shortly be built into the valley from this road. When this is done, and pure water has been piped into the valley, towns and perhaps cities will spring up in the midst of the dread region, even as they are now springing up in the great submarine region of the Colorado Desert. Then, from a region of terror and death, it may become a valley of life, activity, and prosperity.

CHAPTER XIV

THE MOUTH OF HADES

"THE VOLCANOES" is the name given to a most peculiar and terrifying region in the lower Colorado Desert. Its character is such as to lead certain of the Indians who inhabit the desert to believe it to be the gateway to the land of evil spirits. Indeed, it would seem to be the very gateway to Hades, and one is reminded, upon visiting the region, of John Bunyan's description of the "Valley of the Shadow of Death" through which Christian is forced to pass.

"About the midst of this valley I perceived the mouth of hell to be," he writes, "and it stood also hard by the wayside. And ever and anon the flame and smoke would come out in such abundance, with sparks and hideous noises."

One can almost imagine that Bunyan wrote those lines from the Colorado Desert, after viewing the "Volcanoes."

Over an area of more than a mile square are scattered hundreds of cone-like mounds, from one foot to one hundred feet in diameter and of various heights, all of which are busily engaged in spitting forth sulphurous vapors, black ooze, boiling mud and water, and other volcanic matter. Over the region eternally hang dense clouds of steam and hot vapors, and strange sounds emanate from this diabolical region. There are hissings, as of monster serpents; strange and ominous rumblings which come from the bowels of the earth; sharp explosions, singly or in multitudinous concert, like the running fire of armies engaged in battle; moaning noises, as of animals or human beings in distress; thuds and jars, as of heavy bodies falling,—all these and a multitude of other unusual and unnatural sounds are not reassuring to timid hearts.

The region is treeless and herbless. Sulphurous soil and sulphurous air have proven fatal to vegetable life. Not even the cactus or desert sage can survive the poisons of the soil. Animal life is equally scarce, and the very birds of the air avoid the locality.

There is a peculiar sensation experienced upon entering this volcanic region after hours of travel over the desert in the glare of the

sun, which here ever shines from a cloudless sky. As one approaches the eruptive cones he passes into a shadow which is almost startling after the brightness so long experienced. The steam-clouds shut out the sun from this mile of gruesome region, but the heat from the numerous craters more than makes up for the absence of the fiery rays of the sun.

In one portion of the volcanic territory is a body of water a quarter of a mile long, which is known as Lake Juala or Black Lake. Its waters, which are extremely warm, are inky-black, and the hands, when dipped therein, are stained. It is not known what minerals or chemicals are held in solution. It is probable that the waters are poisonous. It may be, however, that they have wonderful medicinal properties, and that they are destined to heal the ailments of humanity. However that may be, this somber sea is in keeping with the region—a fitting lake for the suburb of Hades.

Earthquakes are of frequent occurrence in the vicinity of the "Volcanoes." They are in line of the so-called "earthquake belt," which extends up and down the coast, California being the most frequently disturbed of the coast States.

Since 1850, when the record of these disturbances was begun, more than four hundred shocks have been felt in the State. Some of these have been slight and others have been severe. The earthquake, Christmas evening of 1900, destroyed the village of Hemet over against the western side of the desert and caused the death of six persons. In the year 1812, the mission of San Juan Capistrano was destroyed by an earthquake, and half a hundred lives were lost.

Certain changes are taking place in this region. Some portions of the land are slowly sinking and other points are rising. The same subterranean fires which keep active the hundreds of miniature volcanoes heat the waters of the Caliente and Matajala hot springs, and are doubtless responsible for the frequent shiverings of Mother Earth.

There was a time in the history of the earth —long before man was here to record the history—when a chain of volcanoes extended from Alaska on the north to Mexico and beyond, on the south. These monster spouters left their ineffaceable record upon the continent in the way of vast beds of lava and numerous craters, which the centuries have not been able to hide. The region known as

the "Volcanoes" may be the remnant of that mighty volcanic period, or it may be the dawning of a new eruptive season. It is, in either case, a locality to be shunned.

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CHAPTER XV

DESERT MISCELLANY — UNUSUAL AND PECULIAR FEATURES

THERE are several localities in the deserts, about which cling stories and traditions of unusual interest. Superstition Mountain, situated in the southwestern portion of the Colorado Desert, is one of these.

This mountain is nearly in the line of the old trail taken by the early overland pioneers on their way to the coast by the way of Yuma. The mountain is remarkable in one respect—it scarcely ever presents the same appearance twice. Its contour is constantly changing, owing to the fact that it is bordered by gigantic sand-hills, which are carved and whittled and shaped by the fierce winds which sweep across the plain. If one notes some point or pinnacle as a landmark to-day, to-morrow he will have lost his bearings, for the outlines will have been changed.

This peculiarity of the mountain has awak-

ened the fears of the Cocopah Indians, who inhabit that region, and who are naturally superstitious, and they shun the locality. Nothing will induce them to mount the eminence, and they even avoid that section of the plain. It is to them the abode of evil spirits.

Among other evil spirits who, they believe, inhabit the mountain, is one which bears a strange resemblance to the Gaelic "banshee."

The old folks of the Irish peasantry to this day tell of the banshee, a little, old weazened woman, who is said to appear to persons, clapping her hands and wailing, as a warning of approaching death. The Cocopahs have precisely the same superstition, save that the banshee is a little old man, "Wah Dindin," who is supposed to come down from Superstition Mountain to bring death to the one to whom he appears.

The Cocopahs are very much averse to being photographed, and the sight of a camera is a signal for them to throw themselves face downward upon the earth. They believe that their pictures, if taken, are transmitted to the evil spirits in the mountain, and that, by means of this picture, the little old man of death—the Cocopah banshee—will be able to trace them and bring them death. Some of the more en-

A DESERT POTTERY FACTORY

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lightened and more avaricious, however, upon being bribed with silver, so far overcome their fears as to allow themselves to be photographed.

White men are not so loath to visit the locality. It is believed that this mountain or some of the adjacent hills holds the famous lost "Pegleg" gold mine.

In 1837, a one-legged man named Smith found a mine of wonderful richness in the Colorado Desert. He was piloting a party over the desert from Yuma, when he came to three hills which rose out of the plain. Not being sure of his bearings, he mounted the taller of the hills to get a view of the surrounding country. Upon this hill, which seemed to be composed of black quartz or rock, he found out-cropping ore fairly sparkling with the precious metal. He took specimens away with him and learned, upon reaching his destination, that the metal was really gold. The mine became known as the "Pegleg Mine" from the fact that Smith wore a wooden leg and was known as "Pegleg."[1]

After conducting his party safely to Los Angeles, Smith returned to the desert to

[1] "Pegleg" Smith was a brother of the famous trapper, Jedediah Smith.

investigate his find. He could not locate it. He could not even find the hills which had been the landmark upon which he depended.

In 1861 or 1862, a prospector passed over the trail from Yuma to Los Angeles. In the Colorado Desert he chanced upon three hills, and upon the larger one he discovered gold. He reached Los Angeles with $7000 worth of gold nuggets. He told of his find and described the location. It tallied with the description given by Smith of his find. A party was formed for the exploiting of the mine, and the prospector was preparing to guide his associates to the spot when he was taken ill and died. The mine was again lost and has never been found.

From time to time expeditions have gone forth to look for the lost Pegleg mine, but their searches have been fruitless. Scores of lives have been lost in the quest. To this day skeletons are frequently found in that section of the desert, grewsome reminders of the tortures of that terrible region.

One of the last of these search parties consisted of Tom Clover of Los Angeles and a man named Russell, of San Bernardino. The latter still lives in San Bernardino, but Tom Clover left his bones upon the desert.

He ascended Superstition Mountain to take observations while Russell remained upon the plain. They agreed to meet on the opposite side of the mountain. Russell kept the appointment, but Clover was never seen again.

In the midst of the Colorado Desert, where, previous to the bringing in of water by the Imperial canal system, neither man nor beast could find means of subsistence, are found many earthen ollas of Indian make and of ancient pattern. Nearly every settler in the Imperial Valley has one or more of these relics, some chipped and broken, but many in a perfect condition.

These ollas are not found in groups and collections, but in ones and twos at various intervals in the interior of the desert. They have a story to tell of conditions in the dim past and explain how it happened that certain tribes chose so forbidding a region as a dwelling-place.

In ancient times, before the white man—the most formidable foe the redman has known—came to this continent, the various tribes warred with each other. The strong wrested the choice portions of the land from the weaker tribes, and the latter were forced to choose between the desert with possible death or certain

annihilation at the hands of their foes. They chose the desert.

As was natural in the case, those who dared the desert made their abiding-place at the oases of the desolate region. Here, after a certain manner, they lived and accumulated more or less of the things which represented, to the savage mind, wealth. But even here they were not yet free from their oppressors, who occasionally bore down upon them to give them battle.

In the very heart of the desert, far from food or water, these persecuted Indians finally found refuge. They learned that their enemies dared not brave the perils of the desert wastes, therefore, in times of peace, they carried deep into the desert supplies of food and water, the latter in the large earthen ollas, and cached them in the sands. Each warrior attended to the supply for himself and family. They did not store the supplies of the tribe together, but purposely scattered them.

When an attack was made upon them, each man sought his own cache, and there he stayed till food and water were exhausted. By that time the zeal of the foe would have cooled off, no doubt, and they could return in safety to their homes.

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The Indians thus persecuted have long since passed away, but the story of their tribulations is brought down to us in those ollas scattered over the burning plain.

Before irrigation made habitable a portion of the Colorado Desert, persons who visited the dread region came back to civilization with strange tales of a phantom ship which was seen to sail upon a spectral sea. Sometimes this ship took the form of a full-rigged three-master; again it was a monster war-ship, with conning-towers and turrets, and great guns projecting fore and aft. The phantom vessel always appears in a certain portion of the desert and, instead of sailing slowly into sight and passing steadily on out of range of vision, as a well-regulated ship should do, it has the remarkable faculty of rising suddenly from the mystic sea and as suddenly sinking out of sight again.

When the Imperial settlements were established in the land of mirages the mystery of the phantom ship was solved. About thirty miles south of the international line, in the republic of Mexico, rising out of a level plain, is a triple-peaked mountain known as the Black Buttes. When the atmospheric conditions are favorable, which is frequent, the Buttes,

which from the Imperial settlements are below the horizon, are lifted by refraction into view, and under the transforming power of the mirage they appear like a great ship sailing upon a vast sea.

Sometimes the three peaks are elongated and appear to be masts, while the solid granite bulk of the pile takes on the form of sails, seemingly set to catch the winds of the specter sea. Again the peaks are less elongated, and they appear like the heavier masts of a war-ship, and the sails are tranformed into turrets and towers. The mirage eats into the sides of the mountains, leaving exposed several projecting points, which look like the heavy guns of a battle-ship. Then, perhaps, while the watcher strains his eye to catch the strange vision, it suddenly disappears from sight.

At times the transformation from three-master to war-ship, or from war-vessel to three-master, takes place before the watcher's eyes, as though some mighty wizard were doing the "Presto, change!" act for the gazer's benefit. Then, very likely, the Buttes lose all resemblance to ocean craft and assume their natural shape, but appear to be surrounded by water—a granite isle in a placid sea. So vivid is this picture that the mountain casts a perfect in-

verted shadow of itself in the waters which apparently surround it, but which actually do not exist.

There are other peaks and mountains which are worthy of mention among the features of the Colorado Desert. One of these is Pilot Knob, and Signal Mountain is another. These two mountains are landmarks which serve to guide those who have occasion to cross the forbidding region.

Pilot Knob, in the southeastern part of the desert, is the point toward which eastern-bound travelers shape their course. The peak can be seen more than a hundred miles, and it stands out so distinctly from other mountains in that quarter of the desert that its identity is not easily lost.

Signal Mountain rises abruptly from the level plain near the western side of the desert at the international line. It is visible from all points in the desert, and has served to guide many a traveler to safety who otherwise would have perished in the desert wastes. The mountain is pyramidal in form, and is distinctive from all other peaks of that region.

Along the eastern rim of the desert stretches a long line of hills two or three hundred feet in height, which are known as the "Walking

Hills." They are gray and barren but not lacking in picturesqueness, for many strange and fantastic shapes may be traced in their outlines.

These hills are constantly changing both shape and position, and that is the reason they have received the name of Walking Hills. East of these hills run the trains of the Southern Pacific Railroad. The road was built a little more than a quarter of a century ago, and at that time the tracks were from one fourth of a mile to two miles west of the hills. Now the latter are encroaching upon the road and threaten to bury it beneath millions of tons of sand.

The tracks of the road must either be moved farther east, or else they must swing in to the west of the hills to escape being engulfed by the sandy billows. The hills are composed of fine particles of sand which have been carried before the winds which sweep a hundred miles across a level and barren plain. What first caused the sand to pile up will never be known, but once a barrier was formed, all the sand which fled before the winds piled up, raising the barrier each year. The winds, which always blow from the west, are continually beating against the base of the hills, lifting

DIGGING THE IMPERIAL CANAL

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the sands there, sliding them up the sloping sides and dropping them over the other side. Thus, as the westward slope is eaten away, the eastern side of the hills is added to and they slowly advance toward the east.

The range has yet an open field many miles before it comes to the Colorado River. When the hills reach that point they will disappear, for the waters of that mighty stream will bear the shifting sands away toward the sea.

In the southwestern portion of the desert, one hundred miles across the plain from the Walking Hills, nature has dealt in geometrical figures on an extensive scale.

The plain, at this point, is composed of clay-like soil, very hard and firm, unlike that of the surrounding desert, which is loose and sandy. The clay section is smooth as macadam, and is level save for the geometrical figures which are found thereon in relief.

From beyond the clay-paved section the winds have brought the light, loose particles of soil and have piled them up in crescent-shaped hills at various places about the plain. The hills vary in size but not in shape. Each mound is as true a crescent as is the new moon, or as could be constructed by the most

skillful landscape gardener. The proportions are carefully preserved in the various mounds.

The horns of the crescents all point eastward. The winds all blow from the west. Like the Walking Hills, they travel slowly across the plain, preserving their shape and proportions but growing a little taller, a little broader, and a little thicker as they go, because of the new material which is continually being brought across the plain by the constructive winds.

There is, no doubt, some good and sufficient natural cause for this peculiar construction. Some unalterable law of nature is probably being followed in the shaping of these sand-heaps, but thus far no one has been able to offer an explanation for this remarkable freak of the winds.

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CHAPTER XVI

JOURNALISM BELOW SEA-LEVEL

THE printing-press has sought many strange corners in the universe. It has, in these modern times, led rather than followed civilization. In the new West it usually is, first the printing-press, then the town.

One of the most peculiar phases of journalism is found in the desert region of California. There are, in the two great deserts of the State, four weekly papers, two in each desert. In the Mojave Desert are the *Randsburg Miner*, published in the gold-mining town of Randsburg, in the northern part of the desert, and the *Needles' Eye*, issued from the town of Needles on the eastern confines of the sandy waste.

The Needles is the metropolis of the upper desert country, and the *Needles' Eye* is the larger of the two papers published in this desert. The town has a peculiar history, inasmuch as in the first fifteen years of its

existence it stood upon borrowed ground. In size the township is one and a half times as large as the State of Vermont. The village of Needles is about eight miles west of the Colorado River on the line of the Santa Fé Railroad. The main part of the village is situated upon Section 29 of the township, which is one of the sections included in the railway grant to the Southern Pacific Railroad Company. The town grew naturally about the station, which was established at the time of the building of the Santa Fé road, and little thought was given to titles at that time.

In time the town grew to the dignity of brick blocks, and still the titles remained with the railway company. Some ineffectual efforts were made on one or two occasions to secure titles to the lands from the railway people, but it was not until 1903 that a deal was made whereby the townsmen, in consideration of $43,000, secured deeds to the lands upon which stand their homes and business blocks.

Needles has a population of two thousand souls. It is a mine outfitting town, furnishing supplies for a large and rich gold-mining district north of that locality. The *Needles' Eye*, which is an eight-page journal, is a wide-awake organ owned, printed, and edited by L. V.

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Root, a native of Michigan, but a resident of the Southwest since 1892. He formerly edited the *New Mexico Gleaner* and is familiar with frontier journalism. His paper is devoted to the local interests of the town and to the mining districts of that region.

Randsburg is a typical mining town with desert accessories. It is the chief town of the gold-mining district known as the "American Rand," and has but one rival in the district, Johannesburg, which is close to it in size and importance, but which has not yet arrived at the dignity of a newspaper.

The *Miner* is a four-page weekly devoted to the news of the mines and to local items. It has few features of interest outside the locality in which it is published.

In the Colorado Desert journalism attains an unusual degree of uniqueness. Both papers published in that region are printed below the level of the sea.

The *Submarine* has the distinction of being the first paper in the world to be printed below the level of the sea. It is still unique in that it is the "lowest down" of any paper in the world. In order to hold this record the editor and proprietor, Randolph R. Freeman, was obliged to move to a new locality a few

months after establishing his paper in the desert.

In 1900, the first paper to be printed below sea-level was issued by Freeman at Indio, a station in the desert on the line of the Southern Pacific Railroad. Indio has a depression of twenty-two feet below the level of the sea.

Later, the Imperial irrigation canal was started across the desert from the Colorado River, and the town of Imperial had its birth. Then the *Press* sprang into existence and was printed in an office situated sixty-five feet below the ocean's level. The *Submarine* thus lost double prestige, for it was no longer the only paper published below the level of the sea, neither was it the "most low down newspaper on earth," as the publisher announced in his prospectus.

The editor, in informing his readers of his move, did so in the following language:

"We have dropped from twenty-two feet below sea-level to seventy-six feet below sea-level. We hit Coachella with a dull yet raucous thud. The low, rumbling noise you heard last Tuesday was caused by our printing-office taking the drop. It may be truly said that the *Submarine* is the lowest down, or the lowdownest, or the most low down newspaper on earth. As nearly as we can compute the distance, Hades is about two hundred and twelve feet just below our new office. The paper

will continue to advocate the interests of all the country below sea-level and we want you to fire in all the news you know."

The *Submarine* is nothing if not consistent. It is an eight-page weekly, printed upon paper of a "submarine blue" tint. Its local paragraphs are run under the caption of "Along the Coral Strand." It has a humorous department conducted by "McGinty," the man who fell to the bottom of the sea. There is still another department entitled, "The Undertow." The editor owns a span of fine horses, the names of which are "Sub" and "Marine." In fact there is a flavor of the locality in everything connected with the establishment.

The Imperial *Press*, owned, edited, and published by Edgar F. Howe, is conducted strictly on journalistic principles. The paper is somewhat larger than the *Submarine*. It is an eight-page weekly devoted to the interests of irrigation and of reclamation of the desert lands, and to general and local news.

Howe has been connected with various California newspapers, and has a wide reputation as a commercial editor and an oil expert. He confesses that the Imperial publishing business has introduced him to decidedly new experiences. One of the chief difficulties in printing

a paper in so torrid a region is that it frequently occurs that the ink-rollers melt and the paper is delayed from issuing till other rollers can be obtained from Los Angeles, nearly three hundred miles away. Summer temperature in Imperial ranges from 100 to 120 degrees in the shade and from 20 to 30 degrees higher in the sun. A double set of rollers is kept on hand when possible, but it frequently happens that rollers collapse about as fast as they can be adjusted, and the paper is hung up till a new lot gets in, or till the weather cools off a bit.

Howe has a device of his own invention for the keeping of the rollers when not in actual use. It is a cupboard with a ventilator in the top and a box of sawdust in the bottom. The rollers are set in a rack midway. The sawdust is kept wet, and the rapid evaporation keeps the cupboard moderately cool.

In one feature the *Press* and *Submarine* are peculiar. Each of the papers has a circulation three or four times larger than the entire population of the towns in which the papers are published. Another feature not common with rural publications is that all subscriptions are paid in advance and in cash. There are no delinquent subscribers, for the paper is

stopped when the subscription expires. Neither are subscriptions payable in cordwood, for that is a commodity unknown to desert towns.

Twelve miles north of Imperial, and near the end of the Imperial canal, there was completed, January 1, 1903, a single board building twelve by sixteen feet. When the writer visited the place in the following June he found thirty-six buildings completed and others in the course of construction. This was the town of Brawley, one hundred and twenty-five feet below sea-level. One of the first objects to greet his eye was a printing outfit, the presses, cases, and accoutrements being stacked upon the sands beside a street of the town and near a tent in which resided the owner of the outfit. This was the nucleus of a new newspaper, to be started as soon as a building could be erected for its occupancy. This paper is destined to be the "lowdownest," unless one of the other papers moves still deeper into the great sink. It is among the possibilities of the future to have a paper published three hundred feet below sea-level, for this depression may be reached in the center of the basin known as the "Salton Sink."

CHAPTER XVII

THE END OF THE DESERT

THERE must be, we are told, an end to everything, and the beginning of the end of the desert is at hand. Already two hundred thousand acres of the great Colorado Desert has been taken from it and placed with the productive acreage of the State.

This is but a fraction, to be sure, of the vast amount of arid land in the State and but about one five-hundredth part of the arid area in the United States, but it is a beginning, and when it is considered that it is the work of only two years it will be conceded that it is a marvelous beginning.

Irrigation, to be sure, is not new to the Western country, but reclamation on a gigantic scale is new. Farming was carried on by irrigation in the West before the first white man visited this continent. In Arizona and New Mexico are to be traced to-day vast irrigation canals and reservoirs used by a race that had been forgotten when the first white man

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visited the region. Some of these ancient canals are now being used by both Indians and white men in those Territories.

The national irrigation idea had its birth in Los Angeles in 1890, when the business men of that city met and opened a campaign for securing a Government system. Nearly six thousand letters were written and mailed to representative men of the country with the result that the idea took root and national irrigation became an accomplished fact.

Before the Government passed laws whereby irrigation became a national charge, private enterprise had taken hold of the matter, and the Imperial canal had been started out into the Colorado Desert. This canal has had marvelous development, and two years from the time work was begun upon it more lands had been reclaimed than by any other single irrigation system in the world.

The work of reclaiming the Colorado Desert was begun in 1900. Not far from the Mexican line, at Hanlon's Crossing, the river left a convenient place for the headworks of the great canal. Here is where the river was tapped. About a mile from the headworks the river, which in the bygone ages laid down the sixty-mile barrier between the gulf and the desert,

also left a channel whereby to aid in reclaiming the desert. The first ten miles of this natural channel required some deepening, and then for some sixty miles across the Mexican border and back to the international line the canal was ready-made.

From the point where the canal leaves the Colorado to where it returns to the international line, after circling through Mexican territory, there is a fall of one hundred and fifteen feet, less than two feet to the mile. This, however, is sufficient for the purposes of irrigation.

One of the first questions to be settled, when the project for leading the river out into the desert was considered, was the character of the water. Not all water found in the arid regions is good for irrigation. Much of it is so impregnated with alkali as to be injurious rather than helpful to the soil.

The University of Arizona made daily analysis of the waters of the river for a period of seventeen months. This analysis showed that the waters contained no injurious substances, but, on the contrary, much that is nutritive to the soil.

The waters of the Colorado carry in suspension one-fourth of one per cent. of solid matter.

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The color of the water is about like that of lemonade. The analysis shows that this matter in suspension is composed of clay, lime, phosphoric acid, available potash, and nitrogen. The fertilizing value of these substances is about 25 cents per acre-inch of water. As from twenty-four inches to thirty-six inches of water are used in the course of the year for each acre irrigated, it will be seen that the fertilizing value of the water is from $6 to $9 per acre per year. This means that the land will never wear out but will produce abundant crops so long as worked and irrigated.

Another question which came up for settlement was the permanence of the water-supply. The answer to this was equally satisfactory. The mean flow of the river is found to be forty thousand cubic feet per second, an amount of water ample to irrigate territory eight times as large as the Colorado Desert.

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The volume of water in the lower Colorado River is greater in the summer, or dry season, than in the winter, or rainy season. This is because the river has its source in the great mountainous region in the north, where the melting snows on the mountain-tops during the summer season furnish large quantities of water to the streams which make up the river.

This brings the greatest amount of water at the season of the year when the farmers use the most, a condition most satisfactory to the projectors of the irrigation system.

The main canal, which was begun in 1900, at the beginning of 1903 had grown to be one hundred miles long. This canal is seventy feet wide and eight feet deep, and supplies more than three hundred miles of lateral canals with water. The first season that water was turned into the canal, six thousand five hundred acres of crops were raised where for ages had been nothing but barren desert lands. The second season forty thousand acres were raised, and at the end of the season one hundred and twenty-five thousand acres of land had been broken ready for seeding.

The great sandy wastes have given way to green fields of waving grain, verdant seas of billowy maize and millet, broad meadows of rich green alfalfa, and wide pastures where thousands of cattle dot the plain. In addition to this, new cities are springing up where desolation so recently reigned, and a railroad has crept down toward the Mexican line, and is destined to go on to the line and over, even to the great gulf which ages ago retreated from the land now being turned into a paradise.

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One of the first towns a man hears of now, when he enters the desert region, is Calexico, the most remote of the settlements in the desert north of the Mexican line. It is noted for two things, both of which have to do with the hotel, one of the half-dozen buildings which compose the town. When the visitor steps from the train at Old Beach, in the very heart of the desert, he is apt to be greeted with this question:

"Going down to Calexico?

"Waal, ye 'll git the best meal there of any place in the desert, an' they 've got a shower-bath at the hotel there, too," is the information vouchsafed when the visitor announces Calexico as his destination.

These are the things which have given Calexico fame. It was nine o'clock in the evening when the writer and his party arrived at Calexico in June, 1903, after a two-days drive across the dusty, burning plain.

"This way," said the landlord who answered our hail, showing us into a side room in the adobe structure. "Drop your luggage here. You can wash over there. And right in here," said he, proudly pointing the way, "is a shower-bath. Help yourselves."

A shower-bath in the very heart of the desert! It is no wonder the landlord is proud of

it, for there is not another within two hundred miles.

Calexico is a town with a future,—like most of the desert towns,—in fact, it is nearly all future as yet. It has streets and public squares, but it lacks the buildings. They will follow, however, for the railroad is coming, and a rich farming region will center there. The town is laid out beside the irrigation canal which there forms a portion of the international boundary.

Over this ditch, in Mexico, is the embryo town of Mexicala, which consists of a single row of thatched huts and adobes strung along beside the canal. Nearly every building is a saloon or gambling den, or both. The town boasts of a population of three hundred souls, with but a single white man.

None of the towns in the Imperial country on this side of the line sell intoxicating liquors. This makes Mexicala the Mecca for the "spirituously" inclined. The liquor obtainable there is of a brand known as mescal, and there is murder in every glass. In proof of this assertion, just before we arrived there a Mexican took four drinks and then shot four persons.

Silsbee, twelve miles north of Calexico, is a very young city. There are three or four tents among the mesquites which border Blue Lake,

231 ADOBE HOTEL, CALEXICO, WHICH HAS THE ONLY SHOWER BATH IN THE DESERT

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and there is a general store, post-office, and dwelling combined. The building, as well as the business thereof, is composite. It is made partly of boards, partly of tent cloth, and partly of poles, thatched with greasewood boughs. The proprietor of the establishment, Dan Browning, is a red-faced frontiersman who has faith in the future of his city, and he is in on the ground floor. He will point out to the visitor "Main Street," "the park," "the hotel site," and other attractions, and he sees them all in his mind's eye. To the visitor, however, all these metropolitan wonders appear to be simply desert.

Imperial has the one church of the desert. It is a small wooden structure—the first wooden building in the valley — which is whitewashed on the outside. Imperial is ancient. It has two years the start of its sister towns and it looks down upon them with disdain. Some of the infant cities have designs upon their big sister, however, and they mean to outstrip her in the near future. Brawley is one of these ambitious towns. Heber is another and Holten is still another.

Plans have been perfected for the construction of a grand boulevard which will pass from the northern limit of the Imperial canal system

to the international line at Calexico. This street will be one of the wonders of the State when completed. It is to be one hundred feet wide and thirty-five miles long, and will be so level that it cannot be determined with the eye which way the street inclines.

Along either side of the way and down through the center of the thoroughfare will be rows of trees to shut off from the street the glare of the desert sun. Also on either side will be small canals of running water which will serve, not only to irrigate the trees but will be utilized to lay the dust of the street. When completed it will require but two men to keep the entire street in order.

With this glimpse of the work of reclamation which is taking place in the desert thus afforded the reader, I will drop the subject and bring the final chapter to an end. The death of the desert will be a beautiful one. There will be no lack of flowers to lay upon its bier. Its grimness and fierceness and terrors will have given place to peace, plenty, and prosperity. The region of death will be transformed into a kingdom of life.

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